CME : 01 CONTROL OF SMOOTH MUSCLE CONTRACTION BY THE MEMBRANE POTENTIAL

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Contraction and relaxation of smooth muscle cells (smc) is controlled by changes in the concentration of Ca^{2+} ions in the cytosol ($[Ca^{2+}]_c$). In the relaxed smc, $[Ca^{2+}]_c$ is in the order of 0.1 μM, during activation, $[Ca^{2+}]_c$ increases to 1 μM. There are two underlying mechanisms that increment $[Ca^{2+}]_c$. 1. influx of extracellular Ca^{2+} ions through membrane channels, and 2. release of stored Ca^{2+} ions through ryanodine- and $InsP_3$ receptors of the sarcoplasmatic reticulum (SR). Often, both mechanisms work in parallel. Reduction of $[Ca^{2+}]_c$ goes along with relaxation; this is because the plasmalemmal Ca^{2+} ATPase extrudes Ca^{2+} ions into the extracellular space, or because the Ca^{2+} ATPase of the SR sequesters Ca^{2+} ions. In this review, I will concentrate on experiments that investigated the Ca^{2+} fluxes through membrane channels of the plasma membrane. I will show data from experiments with isolated vascular smc (coronary artery) and visceral smc (urinary bladder) that were performed in my own lab.

Ca^{2+} influx occurs through both voltage and receptor operated channels. The membrane potential controls primarily the activity of L-type Ca^{2+} channels that exist in both excitable and non-excitable smc. At the resting potential of -50 mV, these channels open at a low probability $P_o = 10^{-4}$, this is enough for a steady Ca^{2+} influx. A 6 mV depolarization increases P_o twofold, and Ca^{2+} influx and contraction increase correspondingly. Ca^{2+} influx through L-type channels is inhibited by Ca^{2+} influx and contraction increase correspondingly. Ca^{2+} influx through L-type channels is inhibited by Ca^{2+} channel antagonists such as dihydropyridins. However, also acidosis inhibits P_o because elevated (H^+) screens the membrane surface charges and acts thereby like a membrane hyperpolarization.

Usually, *membrane hyperpolarization* and deactivation of Ca^{2+} influx results from the activation of K^+ channels. The type of Ca^{2+} activated BK^+ channels constitutes a powerful negative feedback control. At present, this control is investigated at the microscopic level, i.e. spontaneous SR Ca^{2+} release inducing Ca^{2+} sparks, STOCs and hyperpolarizations. NO modulates increase those relaxing effects, channel phosphorylation via PKG increases their Ca^{2+} sensitivity. Vasodilation due to hypoxia is most likely due to activation of K^+ channels by ATP-depletion, channels that are also the target of adenosine and a variety of K^+ channel opening drugs. The mediator EDHF and its targets are not yet well defined. *Membrane depolarization* activates L-type channels and Ca^{2+} influx. Usually, membrane depolarization results from the interaction of neurotransmitter or hormones with non-selective cation channels. The receptor can be part of the channel protein (e.g. P_{2x}-R) or it can couple to the channel via a G-protein (e.g. m_2-receptor). Non-selective channels can also be activated via mechanical stretch, an effect that contributes to the myogenic tone. In case of receptor activated channels, Ca^{2+} influx can occur also at a constant membrane potential because a significant fraction (between 2 and 10%) of the current is carried not by Na^+ but by Ca^{2+} ions.

CME : 02 PHENOMENOLOGICAL DYSFUNCTION OF ION CHANNELS IN ION-CHANNEL RELATED DISEASES

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Ion channels in the cellular membrane are the pathways for ions to traverse the membrane by passive movement. Specific species of ions flow through specific channels either to regulate the membrane potential to ultimately control the influx of Ca^{2+} as second messengers or to transport ions such as Cl^- to regulate cell volume or to secrete fluid across the epithelium. Voltage-gated Na^+, Ca^{2+}, and K^+ channels and inwardly rectifying K^+ channels are the primary channels responsible for the generation of action potential and resting potential in excitable cells. Recently, many of molecular structures and function correlated amino acid residues of these ion channels have been clarified. Now, there are also many diseases which have been identified as hereditary ion channelopathy originated from a discrete mutation of the ion channel structure. In the elucidation of the ion channelopathies, patch clamp technique was used as a powerful technique, as it directly demonstrated the dysfunction of the channel by providing abnormal ion channel currents. The major aim of our talk is to present the abnormal single channel or

whole cell currents obtained by the patch clamp technique from the cells subjected to representative Na^+, Ca^{2+}, K^+ and Cl-channelopathies. In addition, we present our findings of functional role of b subunit in cardiac L-type Ca^{2+} channel gatings, Ca^{2+} activated K^+ channels in a cell line from rat heart and cardiac excitation resulted from an instability of membrane lipid bilayer.

CME : 03 ION CHANNEL DEPENDENT DISORDERS : CLINICAL ASPECTS

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Ion channels are a class of proteins which are responsible for generating and controlling the thinking brain, beating heart and contracting muscles. Modern molecular biology and patch clamp electrophysiological technique have made it possible to clone, express and characterise the gene encoding many of these proteins. The ion channels are classified according to the type of ion that may allow to pass; sodium, potassium, calcium and chloride. Defective ion channel proteins are responsible for a number of disorders which include cystic fibrosis, long QT syndrome, heritable hypertension, familial persistent hyperinsulinemic hypoglycemia of infancy, hereditary nephrolithiasis and a variety of heritable myopathies such as Becker's generalised myotonia, central core, storage disease, congenital myasthenic syndrome, hyper and hypokalemic periodic paralysis, malignant hyperthermia, masseter muscle rigidity, myotonia levior, paramyotonia congenita, pure myotonias and Thomsen's myotonia congenita. The bed side application of ion channelopathies in neurological disorders will be discussed.

Identifying the structural framework of major ion channel proteins and resolving the precise relationship between structure and function of these protein should make possible to develop new therapies of these disorders.

CME : 04 ROLE OF ANTIDIURETIC HORMONE IN CHILDREN

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1	2	3	4	5	6	7	8	9
Cys.	Tyr.	Phe.	Glu(NH_2).	Asp(NH_2)	.Cys.	Pro	.Arg.	Gly (NH_2)

Structure of ADh was first discovered by Prof. du Vigneaud (1954) and he was awarded with Noble prize. Several developments in peptide synthesis example solid phase peptide synthesis helped in development of a molecular Desmopressin. ADH is a neurohypophyseal hormone is synthesized in separate ganglion cells of supraoptic nucleus of anterior hypothalamus and migrate down the axon along with carrier protein neurophysin in to posterior pituitary. ADH is released from neurohypophsis granules by exocytosis in to blood stream. ADH release in normal children is controlled by osmoreceptors, volume regulation. Baroreceptor functions, neural regulation. Released hormone is arginine vasopressin in human subjects and acts on two types of distinct receptors. V_1 receptors produce effects on endothelial functions via Phosphoinositide cascade resulting in vasoconstriction glycogenolysis platelet activation and ACTH release. Cell growth via transcription factors ex FOS, JUN is altered by these receptors. V_2 receptors are stimulated by the hormone which are located in the apical cells of the basolateral membranes of collecting and distal tubules. ADH activates adenylane cyclase and cyclic AMP is formed which increases the permeability of the nephrons. This action is responsible for maintenance of osmolality of body fluids and homeostasis. A new protein aquaporin has recently been identified which also regulates the water movement and might have very important role to play in children in various pathological states example Diabetes insipidus, in appropriate secretion of ADH, nocturnal enuresis (NE), hyponatremia and several growth related diseases in children.

Vasopressin excretion is new born babies of very low order as compared to adults, (1-3 uU/ml 2.5-7.5 pg). ADH is estimated in body fluids by bioassay or radioimmunoassay. Plasma values of ADH in Indian children have not been reported by many workers except one study of Srinatia and Mohan Ram (1970). However, Puri (1980)

have reported lower excretion of urinary vasopressin as compared to adult. Chronobiological variation of ADH excretion has been reported in plasma and urine of children and adults. Puri (1972), George et al. (1975). it has been observed that enuretic children excrete lesser amount of urinary ADH compared to the adults. Nocturnal excretion of ADH is higher compared to day in adults and children [Puri (1972), George et al. (1975]. It has been observed that enuretic children excrete lesser amount of urinary ADH compared to the adults. Nocturnal excretion of ADH is higher compared to day in adults and children [Puri (1972) and Puri (1980)]. These finding support the scientific basis that NE is due to alteration in the biological rhythm of ADH in children. Now in recent past several studies have reported beneficial effect of Demopressin treatment in NE. Miller et al. (1992). In 21st century aquaporin analogs may prove useful in treatment of NE.

Diabetes insipidus (DI) in children is not very common. However, disturbance in vasopressin secretion and release and action are reported in children. DI may be centrogenic or nephrogenic. Both these conditions are diagnosed by polyurea, polydipsia, polyphagia. Urinary and plasma osmolalities are below 300 mOSM/Kg and plasma, CSF, urinary vasopressin is low.

Treatment insipidus (DI) in children is not very common. However, disturbance in vasopressin secretion and release and action are reported in children. DI may be centrogenic or nephrogenic. Both these conditions are diagnosed by polyurea, polydipsia, polyphagia. Urinary and plasma osmolalities are below 300 mOSM/Kg and plasma, CSF, urinary vasopressin is low.

Treatment consists of surgical intervention or exogenous administration of ADH. Demopressin is preferred as it has potent antidiuretic action and negligible pressure action. Some cases with genetic inheritance is difficult to control and treat. Drugs, indomethacin, carbamezapine, chlorpropamide, imipramine increase ADH levels, so useful as treatment modalities. Lithium treatment produces polyuric syndrome, antibiotic demeclocycline is also known to produce similar clinical picture.

Syndrome of inappropriate ADH secretion is also reported in children as several diseases like Hodgkins, tuberculosis, encephalitis, meningitis, lups erythematosis and above mentioned drug used produces this syndrome. Patient with hyponatremia should be worked well to exclude the possibility of this syndrome. Treatment is the cause or demopressin.

ADH may have strong bearing with memory consolidation and retrieval in children. ADH may also be involved in pro coagulant factor VIII, and other diseases related with new born and children. ADH has found the attention of treatment of practitioners in esophageal and bleeding from other organs due to its vasoconstricting action. Many cardiovascular diseases (hypertension in children) is getting more attention and in 21st century with more research in this area many more involvement of ADH in the diseases of children will be understood.

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CME : 05 AN OVERVIEW OF ION CHANNELOPATHY - A NOVEL CONCEPT IN MEDICINE

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Ion channelopathies are new category of diseases due to disturbances in ion channels, the transmembrane protein molecules with a central hydrophilic pore for transport of essential electrolytes like Na, K^+, Ca and Cl, across cell membrane to bring about the cellular functioning. Ion channels are crucial in mediating the effects of neurotransmitters, hormones and drugs etc. Over the last four decades a variety of ion channels have been identified

with the help of patch-clamp technique and their specific physiological significance identified. Cloning and patch-clamp technique and their specific physiological significance identified. Cloning and expression studies have further helped in identifying the primary structure of the channel protein, its functional relevance and its role in various disorders. The ion channels are broadly classified into superfamilies of voltage-, ligand- as well as stretch (volume)-activated channels. Studies during the last one decade have identified direct association of ion channels with a number of diseases. The first such channelopathy was cystic firbosis which was traced to disturbances in Cl channels and related secretory processes. The list of ion channelopathies has been growing fast with the discovery of a number of neurological/muscular (e.g. myotonias), cardiovascular (e.g. long QT syndrome, familial hypertension), renal and endocrine channelopathic diseases. These disorders are grouped into Na-, Ca- or Cl- channelopathies and investigations have led to identification of the precise amino acid(s) and/or the ion channel genes responsible for causation of the disease. These notable advances in medicine hold enormous promise to develop novel and specific agents for management and treatment of a number of familial and acquired disorders. Since ion channels form the first trigger for cellular functioning it is believed that many more diseases belonging to this novel group of disorders will be identified in future with hope for unprecedented means for their treatment and prevention.

CME : 06 PHYSIOLOGY OF ELECTROLYTE BALANCE

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The science of mammalian physiology involves the study of dynamic interrelationship that exists among cells, tissues and organs and reaches ultimately to the level of the organism as a whole. The cell is the smallest functional unit and is itself composed of organelles. The life of this precious structure, 'The Cell' depend upon the homoeostasis between extracellualr and intracellular fluid. Any disturbance of this homeostasis leads to disturbed cell function resulting in disease and ultimately death.

Although the body fluid contain a large variety of soluts. The electrolytes are predominant soluts in the body fluid and arealso primarily responsible for determining the distribution of water among the various compartments of the body. The electrolyte balance between ECF and ICF depends upon osmolality of the body fluid, composition of ECF and ICF and status of plasma membrane permeability. Any deviation from the normal leads to disturbed homeostasis which manifests as diseased condition.

OR : 01 MAJOR GENERAL SL BHATIYA ORATION - PHYSIOLOGY FOR DEFENCE APPLICATIONS

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Since antiquity, defence technological advancements and 'know-how' have witnessed a dichotomous evolution; one in the material and physical domain and the other in the biological one. The former has almost always maintained an edge over the latter. The result has been that the physiological component or the human operator has remained the weakest constituent in the man, machine system. To further add to the complexity of such system, modern warfare can extend to the most extreme corners of bio-sphere. Future wars are visualised to be even extraterrestrial in nature. Therefore, this has been a persistent strife of all those working in the field of life sciences to optimize the performance of the human component in all such ventures. Such practices can largely be grouped in 4 categories viz. - (1) application of physiology and ergonomics in the design and development of a combat system so that it remains compatible, to maximum possible extent, with a human operator (2) selection of only those who are physiologically well suited to operate such systems, (3) protection of human operator in a hostile and injurious environment with maximum of efficiency and (4) possible rehabilitation of such an expensively trained manpower in his main or allied employment. State-of-the-art technical 'know-how' for such an application of physiology is, however, not freely accessible, its acquisition requires a protracted and sometimes, even wastefull expenditure and the

achievements are often susceptible to be sabotaged. The paper discusses current status and future projections of the above quoted strategies as applicable to Indian Armed Forces.

OR: 02 BURIDGES MATHUR ORATION - INTEGRATIVE PHYSIOLOGY: A FUTURISTIC PERSPECTIVE

KN SHARMA
C-195, RAM PRASTHA, DELHI - UP BORDER, CHANDER NAGAR, GHAZIABAD.

PL: 01 OXYGEN SENSING MECHANISMS IN THE CAROTID BODY: ROLE OF ENDOGENOUS NITRIC OXIDE (NO) AND CARBON MONOXIDE

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PL: 02 STUDIES ON NEUROBIOLOGY OF AGGRESSIVE BEHAVIOUR*

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*[Studies were conducted in collaboration with a number of colleagues, prominent among whom were SC Bhatia, Suman Maindiratta, Arurima Poddar and Som Nath Saha].

Although many types of aggressive behaviours have been documented in scientific literature, at least two types viz., predatory, and that with marked affective display can be elicited by adequate hypothalamic stimulation with marked accuracy and precise localisation. The neural pathway elaborating aggressive behaviour involves associative and limbic cortex alongwith the respective subcortical nuclei on one end and the hypothalamus and various midbrain regions including preiaqueduct gray on the other end, amongst themselves incorporating a vigorous interaction. The integrated output finally impinges on the final motor neurons to produce an appropriately patterned somato-motor and effective display activity employed to hurt/harm/kill the victim. This report will particularly focus on the hypothalamo-periaqueductal gray (PAG) interaction elaborating the aggressive behaviour and unravel the role of various neurotransmitters at the PAG level. It will emphasise the polymodal nature of the PAG neurons and show that infusion of small doses of acetylcholine and its antagonists, norepinephrine and its antagon sts, GABA, enkephalins and naloxone, serotonin and its antagonists in the pAG markedly alters the nature of aggressive response elicited by hypothalamic stimulation of freely moving cats. These effects are predictable, and dose-dependent.

The report will also review the elaboration of aggressive behaviour in the light of feedback homeostatic mechanisms and bring out the parallelism between aggressive behaviour and ingestive behaviour drawing attention to the morphological overlap at the hypothalamic level and support the conclusions with scientific literature on human aggression.

PL : 03 CHLORIDE CHANNELS AND THEIR PHARMACOLOGICAL ASPECTS

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Chloride (Cl^-) channels play important roles in the regulation of membrane potential, excitability of muscle, cell volume and transepithelial transport of fluid. They are classified to four families (1) cAMP-dependent, cystic fibrosis transmembrane conductance regulator (CFTR) Cl^- channel, (2) voltage-gated CIC Cl^- channel; (3) volume-

sensitive Cl^- channel; (4) Ca^{2+} activated Cl^- channel. Cystic fibrosis is an autosomal recessive disorder. CFTR is expressed in epithelial cells and in cardiac myocytes. Epithelial secretory cells with defective CFTR are not capable of transporting Ci- through the apical membrane, resulting in impaired water transport resulting accumulation of thick mucus in the air way epithelia and in pancreatic and sweat ducts. The CFTR channel has two hydrophobic domains having six putative membrane-spanning segments, two cytoplasmic nucleotide-binding domains and a cluster of consensus sequences of phosphorylation by A-kinase. The Cl^- currents through CFTR is characterized by cAMP-dependent regulation. CIC family consists of 7 species from CIC-1 to CIC-7. The CIC channel has 13 hydrophobic segments including 11 membrane spanning segments. In resting skeletal muscle Cl^- conductance is four times larger than the K^+ conductance. The mutation of sceleral Cl^- channel (CIC-1) results in myotonia conenita. The defect of CIC-5 which is expressed in kidney is responsible for hereditary nephrocalcinosis. The ability to regulate cell volume is a fundamental property of most cells. The volume sensitive Cl^- current (ICl.swell) is activated by the cell-volume increase to result the regulatory volume decrease (RVD) by extruding salt with water from the cell. The ICl.swell activation occurs ubiquitously, in epithelial cells, endothelial cells and in cardiac myocytes. ICl.swell exhibits low Ca^{2+} sensitivity. Recent study has revealed that CIC-3 is the molecular correlate of ICl.swell. Ca^{2+} activated Cl^- current (ICl.Ca) is involved in the physiological regulation by external and internal messengers of membrane potential and transport of solutes. In cultured human aortic endothelial cells, reduction of external [Cl^-] resulted a reduction of ATP-induced [Ca^{2+}]i increase due to depolarization induced by the change in Cl^- current. In these cells intracellular application of Ca^{2+} produced a large Cl^- current, but in a volume sensitive manner. It remains to be established whether ICl.Ca and ICl.swell are produced from the opening of discrete Cl^- channels.

PL : 04 ROLE OF ANIMAL EXPERIMENTS IN UNDERSTANDING HUMAN PHYSIOLOGY

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PL : 05 CONGESTIVE HEART FAILURE

RAJENDRA SETH
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New insights in pathophysiology of heart failure have prompted newer paradigms that often appear unorthodox. Cardioreduction and BETA blockade exemplify this besides LVAD, cardiomyoplasty, dual chamber pacing, and transplant.

Array of new information e.g. asymptomatic left ventricula dysfunction, diastolic dysfunction in pathophysiology and ACE inhibitors, and Beta blockers like carvedilol and bucindolol, natriuretic peptides e.g. ANP and BNP, NEP inhibitors, ACE-NEP inhibitors in pharmacology make the case in point.

Longer survival due to the above is also impacting the economics of this cardiac disorder.

CHF has become a disorder involving (1) neuroendocrine (2) RAA (3) cytokines = TNFA and IL6 (inflam. paradigms) (4) skeletal muscle besides being a cardiac disorder.

Beta blocker trials include : (1) US (Carvedilol trial); (2) ANZ trial (Carvedilol); (3) CIBIS II (Bisoprolol vs. Placebo); (4) RESOLVD (Metroprolol - Candesartan - Placebo); (5) COMET (Carvedilol vs. Metroprolol); (6) BEST (Bucindolol), NIH

Older Ace inhibitor trials:

(1) VHEFT I; (2) VHEFT II; (3) SOLVD (4) SAVE (5) TREND

AP: 01 EVIDENCE FOR ANTIAGGRESSIVE PROPERTY OF SOME CALCIUM CHANNEL BLOCKERS

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Involvement of calcium in the neuronal activities is well documented. Calcium channels as well as specific binding sites for calcium channel blockers (CCB) are present both in animal and human brain. In the last few years behavioural effects of CCb have been reported particularly anticonvulsant and analgesic activity. In the present study effect of CCB have been investigated on aggressive behaviour according to the method of Anand et al. (1977). The study was carried out in male albino mice weighing 20-30 g. All the drugs were administered by intraperitoneal route and observations were made prior to and 30 min. after the drug administration. Verapamil diltiazem (20 and 40 mg/kg) and nifedipine (25 and 50 mg/kg) significantly decreased the fighting count. Amphetamine (5 mg/kg) and physiostigmine (0.05 mg/kg) facilitated fighting behaviour in this model. Verapamil (40 mg/kg), diltiazem (40 mg/kg) and nifedipine (50 mg/kg) administered 30 min before amphetamine significantly blocked its facilitatory effect. Physostigmine induced facilitation of aggression was only blocked by verapamil (40 and 80 mg/kg). In conclusion, CCB possess potent antiaggressive property which may be attributed to decrease in dopaminergic mechanism and atleast in part due to decrease in cholinergic activity.

AP : 02 EFFECT OF HIGH-ALTITUDE HYPOXIA ON FEEDING RESPONSES AND HEDONIC MATRIX IN RATS

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Albino male rats (n=78), were exposed to a simulated high altitude (HA) equivalent to 7,620 m for 6 h daily, contiguously for a period of 21 days, to study their feeding behaviour and gustatory responses. Their food, water intake, and body weight were recorded daily, and blood sugar and blood insulin were estimated once a week. All the parameters were recorded for a period of 3 week each before, during and after exposure to simulated HA. The results show a decrease in daily food and water intake and body weight and mild hyperglycemia and hyperinsulinemia during hypoxic exposure. The 1-h single bottle taste solution test showed a preference for sweet solutions (13% glucose and 0.2% saccharine) over citric acid (0.16%), sodium chloride (0.9%) and quinine sulphate (0.001%) during exposure to simulated HA. The 1-h two-bottle test containing glucose (calories plus taste) and saccharide (taste but no calories) administration showed a preference for glucose solution over saccharide solution. The trend of 1-h intake of all test solutions also showed a reversal to preexposure levels after termination of HA hypoxia. It would appear that high-altitude stress influences food intake in a manner that sensory cues (e.g., preference for sweet substances become more important).

SYMP. : 01 TEACHING PHYSIOLOGY THROUGH PROBLEM BASED LEARNING

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Learning during the process of resolution of a problem is not a new concept. However, its incorporation into medical sciences is fairly new. Problem based learning (PBL) was first introduced in the McMaster University in Canada in 1968-69, as the principal method of instruction for medical teaching. it remained confined to McMaster for several years and later started spreading to other medical institutions. PBL, in varied forms is now being followed in more than 60 medical schools over the world. PBL approach is more suitable for an integrated curriculum. One of the main stay of PBL is small group discussions (tutorials) and an active student participation in teaching-learning process. PBL offers several advantages - avoids overloading, encourages students active participation, self directed study has potential for creating life long motivated learners, incorporates three main principles of learning namely

activation of prior knowledge, encoding specificity and elaboration of knowledge. Despite some obvious advantages of PBL over traditional system there is a lot of resistance in acceptance of this approach. There could be several reasons for this inhibition on the part of faculty including increase in teaching commitment and lack of proper infra structure. However, these barriers can be broken by introducing PBL into the traditional system.

Our experience with PBL in Bahrain and more recently in BPKIHS, Nepal has revealed very rewarding responses from students as also teacher participation which indicate how artificial are these barriers.

The process of PBL from selection of a problem, its formulation and implementation with emphasis on scope of elaboration of physiological mechanisms will be described in this presentation.

SYMP. : 02 ROLE OF A MEDICAL TEACHER IN COMPUTER AIDED TEACHING OF PHYSIOLOGY

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Today teaching with the help of computers has become a norm of the day. The present generation is growing up with the computers. They would like to have their medical studies also with the help of computers. All over the world the computer professionals are making educational software. In the field of medicine too some software have been made. The educational software for physiology are mostly designed for non-medical and/or paramedical students. The software made in USA for medical students fall short of our expectations. To overcome this problem we in India will have to make our software. We need custom made software for teaching physiology. This is where the role of a physiology teacher in developing the software comes in. It should be kept in mind, that the software being developed is for self-learning. Basic knowledge of computers, which can be acquired even without attending any professional course is more than adequate for developing such a software. These should be simple and easy to run on any configuration of computers. With this in mind a study was undertaken to develop a software for computer aided teaching of physiology to the students at I MBBS. The software was designed in such a fashion that it could be used for self-learning by students. In the package the students will be able to acquire comprehensive knowledge about the body systems. They can attempt to answer some questions suggested in the package.

Key Words: Computer, Teaching.

SYMP. : 03 PROBLEM BASED LEARNING (PBL) - AN ACTIVE METHOD OF LEARNING IN MEDICAL SCIENCES

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Problem based learning (PBL) is an attentive metho of learning in Medical Sciences which emphasizes not only what is learning but how it is learned. This is a student centred, self directed learning as compared to traditional method which is teacher centred approach and widely followed in India.

The aim of PBL is to produce medical graduates who are committed to rational, compassionate health care and help them to become graduate responsive to health needs of individuals, families and communities. Problems are designed to develop the students clinical reasoning abilities and to enhance their skills in working in groups.

The role of teacher is redefined, tutors act as facilitators of the reasoning process rather than subject experts. The medical comment of India in its recent graduate medical programme 97 has emphasized that a portion of teaching in medical sciences be done through problem based learning. The methodology is widely be practiced in developed countries like USA< US, Canada and Australia though the teaching faculty in India is not much aware of this new methodology.

PBL curriculum differ remarkably in curricular design, problem formats used by students, role of teacher and the size of students group.

The timing, expenses and trouble involved in designing problems according to the need of the society and the country in problem based learning is also a factor.

Students are also not aware of this methodology.

SYMP. : 04 AN EXPERIENCE WITH STUDENT PARTICIPATION IN TEACHING-LEARNING PROCESS

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Most of the teaching in Medical Colleges is passive and examination oriented. Participation of the students in this process is negligible. There is increasing recognition of the fact that learning method, which places the learner in an active state is best for learning. Keeping this fact in mind the present study was undertaken to assess how far students active participation helps in the process of learning. Second professional MBBS students were selected for the study.

Three different methods of learning/teaching were evolved:

a) Cent percent passive learning.
b) Seminars/Drug conference by students.
c) Cent percent self learning.

The study was evaluated by (a) analysing the performance of the students in tests, consisting of short objective type questions; (b) the response to a questionnaire supplied to the students at the end of the study.

It appears that students' active participation helps in better understanding of the subject.

SYMP. : 05 ADVERSE DRUG REACTIONS AND ITS INCIDENCE IN OUR HOSPITAL

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CLINICAL PHARMACOLOGY UNIT FOR RATIONAL CARE OF PATIENTS, DEPARTMENTS OF PHARMACOLOGY, MEDICINE, SKIN & V.D., K.G'S MEDICAL COLLEGE, LUCKNOW.

Adverse drug reaction constitutes one of the important public health problem now a days. Only isolated reports on A.D.R. are available from India. Adverse Drug reactions have been classified as concentration dependent ADRS (type A), concentration independent ADRS (type B) and duration dependent ADRS (type C) as per the classification of Saxena 1992.

The present study includes a prospective surveillance of 83,803 cases selected from the inpatients department (IPD) of Medicine, Skin, Surgery, Paediatrics, E.N.T., T.B.H., Gynaecology and Ophthalmology and outpatients department (OPD) of Medicine and Skin over a period of 69 months from 1st January 1992 to 30th September 1997. Over all incidence of ADR observed was found to be 0.25% (210/83,803). The IPD cases showed a higher incidence of ADR 0.53% (112/210) as compared to OPD 0.46% (98/210). The incidence of ADR was found to be higher in females 52.85% (111/210) as compared to males 47.14% (99/210) and was higher in the age group of 31-40 years 25.71% (54/210). The maximum number of cases belong to the chemotherapeutic drug group (n=122, 58.09%) followed by antipyretic antiinflammatory analgesics (n=41, 19.52%), central nervous system (n=17, 8.09%), dermatology (n=11, 5.23%), gastrointestinal (n=8, 3.80%), cardiovascular (n=6, 2.85%), hormone (n=3, 1.42%), respiratory system (n=1, 0.47%) and vitamin (n=1, 0.47%). Maximum number of cases were associated with skin manifestations 36.19% (76/210). Since in India alternate system of medicines are also prescribed and there are

well known toxicities of such drugs, as such the incidence of such toxic reactions must also be recorded despite the claim by the herbalists of their lack of toxicities.

Reference: Saxena R.C. Overview of ADR and its relation with nutrition. Symposium on prediction, detection and avoidance of Adverse Drug Reaction. Vth World Conference of Clinical Pharmacology & Therapeutics. Yokohama (Japan) 1992.

UG : 01 EEG VARIATIONS WITH GENDER

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Two research project were undertaken in year 95-96 in the Department of Physiology, King George's Medical College, Lucknow to evaluate the variations of EEG of Right and Left handed persons and EEG variations with menstrual cycle. During analysis of data it was observed that there is some discrepancy in the amplitude of alpha waves between male and female subjects. On the basis of this observation further research was carried out.

21 channel awake EEG (under 10-20 system of electrode placement) of normal healthy subjects between the age group of 18-28 years were taken. The montages used were AP, RL and monopolar. The difference of amplitude and frequency between the corresponding areas of the male and female subjects was evaluated in terms of changes in the frequency of waves and in particular the voltage change (amplitudes) of alpha waves. The results confirmed the preliminary findings that the female do have a large amplitude of alpha waves of EEG in all the areas of brain.

UG : 02 EFFECT OF VOLUNTARY AND ELECTRICALLY INDUCED EXERCISE ON SOME RESPIRATORY FUNCTIONS

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The effect of voluntary (Ev) and electrically induced (Eel) exercise training was explored on FCV, FEV_1 and PEF in twenty medical volunteers between the age of 18-21 years. During the training sessions, ten subjects carried out bicycle ergometric exercise at the rate of 50 watts for 20 minutes per day for a period of eight weeks. In the other ten volunteers, electrically induced exercise was produced by placing the carbonized rubber electrodes on both gastrocnemius muscles and stimulating them through an electronic stimulator at a rate of 40-50 contractions per minute for 20 minutes each day for eight weeks.

It was observed that as a result of training, the FEV_1 and PEF increased more significantly in the Ev group in comparison to the Eel group. However, FVC did not show significant rise in either groups. It seems that the respiratory stimulation as a result of training produced functional improvement of the respiratory muscles and hence the increase in FEV_1 and PEF. However, in Eel group the respiratory stimulation did take place, though not of the same degree as in the Ev group. But nevertheless, the changes in the respiratory muscles function seemed to have improved, as suggested by the increased values of FEV_1 and PEF

UG : 03 DOES DIETARY INTAKE OF VITAMINS C AND E INFLUENCE LUNG FUNCTION IN OLDER PEOPLE?

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Antioxidants in the lung have a protective role against oxidative damage. We have investigated whether dietary antioxidant intake in elderly people is related to lung function. Dietary intakes of ascorbic acid (vitamin C) and alpha-tocopherol (Vitamin E) and lung function were assessed in 200 men and women aged 70 to 80 years

selected on the basis of reported respiratory symptoms. After adjustment for age, gender, height, smoking habits, total energy intake, and vitamin C intake. Effect of oral administration of vitamin E on lung function in older people were analyzed. The results of our studies shows that for every extra milligram increase in vitamin E in the daily diet there was significant increase in FEV_1 and FVC. These results suggest that dietary intake of vitamin E may influence lung function in the elderly, but food frequency questionnaires in this study were not of sufficient sensitivity to explore this hypothesis further.

UG : 04 PHYSIOLOGICAL APPROACH TO TREAT FOCAL CEREBRAL OEDEMA/GLIOSIS INDUCED SEIZURES

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Cerebral oedema/gliosis due to hypoproteinemia is a rarely reported entity, but we are reporting two cases of motor seizures with classical clinical presentation, CT-scan picture of cerebral oedema/gliosis.

Both cases were males in age group of 25 to 35 years. They were treated at different places by Eptoin and Tegretol. We subjected them to EEG, routine urine and haemogram, serum protein level along with CT-scan. Outstanding feature was marked hypoproteinemia (3.3 g/dl). EEG was normal. Contrast enhance CT finding revealed in ill-defined hypodense area in right temporal lobe with absence of mass effect suggesting oedema/gliosis of right temporal lobe in cerebral parenchyma.

Suspecting hypoproteinemia as presumable cause, they were kept on intravenous protein (Hermin) infusion, initially at weekly interval for a month followed by fortnightly infusions for another month. In the post treatment phase serum protein level attained 7.79 g/dl level, contrast enhance CT revealed complete disappearance of pathological findings.

In follow up studies for one year the patients were totally symptom free.

Hypoproteinemia may lead to isolated cerebral oedema/gliosis induced seizures, is suggested.

UG : 05 NOVEL POSITIVELY CHARGED ETOPOSIDE ENCAPSULATED LIPOSOMES

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Etoposide, a first line drug for SCLC, choriocarcinoma etc. acts through DNA topoisomerase ill interaction leading to cytotoxicity. It is however, poorly soluble in water and has limited stability in solution. The amount of solvent required to deliver the drug is also high and has been associated with concentration dependent adverse effects. Positively charged liposomes encapsulating etoposide were developed and subjected to efficacy, stability, pharmcokinetic and toxicity studies as compared to conventional formulations. Efficacy of the formulation was tested *in vitro* on choriocarcinoma cell lines and *in vivo* in refractory 20 MCA induced tumours in mice. Toxicity studies were conducted on healthy weiss albino mice treated with a dose of 10 mg/m^2 for 5 days. The animals were sacrificed on day 7 and subjected to tests for pathological, haematological and biochemical parameters. The liposomal formulation was found to have better stability as evident from drug leakage studies. *In vitro*, it retained the activity of free etoposide while it had superior efficacy in the *in vivo* studies. It can be concluded that the etoposide encapsulated liposomes retains or enhances the growth inhibitory activity and cytotoxicity of free etoposide with better aqueous stability and lesser adverse effects.

UG : 06 IN VITRO ACCUMULATION OF POLYOLS IN RAT LENS AND RETINA

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The role of aldose reductase (AR) in causation of diabetic complications and its prevention by aldose reductase inhibitors is reported. In the present study we demonstrate the accumulation of polyol in rat lens and retina in high galactose media *in vitro* and its inhibition by bioflavenoids quercetrin and myrecitin. Sulindac was taken as a standard aldose reductase inhibitor for comparison. Effects of bioflavonoids were also seen on AR activity of rat lens and retina. Isolated lens and retina were incubated separately in TC-199 media containing 30 mM galactose at 37 degree centigrade for three hours (control group). Contralateral lenses and retina were incubated similarly with supplementation of sulindac, quercetric and myrecitin (10 mM each) (treatment group). Fresh weight were recorded and processed for polyol estimation by the method of West and Roppaport. AR activities in homogenates were measured spectrophotometrically. The average polyol inhibition by sulindac, quercetrin and myrecitin in lens was 74.7%, 78.1%, 67.5% respectively and in retina was 4.5%, 48.1%, 47.9% respectively as compared to control. A significant inhibition was observed in AR activity of lens and retina by tested flavinoids. It appears from the study that quercetrin is more effective inhibitor of AR than myrecitin in rat lens and retina.

UG : 07 PREVALENCE OF HIGHER THAN NORMAL BLOOD PRESSURE IN DENTAL STUDENTS

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Prevalence of higher than normal blood pressure in a community is inversely related to the magnitude of the elevation; the milder grade of elevation are far more prevalent. The range of 85-89 mm of Hg diastolic pressure is considered high normal. These persons have greater risk of cardiovascular complications. Studies have shown that their levels of hypertension are associated with 50% increase in late adverse outcome. 80% of these persons progress to definite hypertension. In view of all these facts it is important to note the prevalence in younger age group. In the present study young dental students were examined to detect the prevalence of high normal blood pressure. The result indicate significant prevalence at younger age too.

UG: 08 PREVALENCE OF DENTAL CARIES IN SCHOOL GOING CHILDREN OF LUCKNOW CITY

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The present study was conducted on 407 children, which included 207 boys and 200 girls, from different schools of Lucknow (Age group 5-12 years). In each case, we noted the presence or absence of dental caries. Out of 207 boys, 132 (63.76%) and out of 200 girls, 120 (60%) had dental caries. This dental caries was further subclassified on the basis of no. of teeth involved. In the study we have analyzed the prevalence of dental caries statistically in two age group (5-8 years) and (9-10 years), correlated with brushing habit and food habit - veg/non veg. with special reference to chocolate/sweet loving habit.

UG : 09 STUDY OF LIPID PEROXIDE LEVELS IN DENTAL CARIES PATIENTS

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Lipid peroxides are one of the important constituent of Free radicals. These free radicals are formed continually in our body at cellular level and our body has a protective system against these free radicals, whenever this balance

is lost the condition is called as oxidative stress. In our country dental caries is one of the major problem. In the present study lipid peroxide levels were measured in dental caries patients to know about free radical status in this particular disease. The study shows significantly high level of lipid peroxide in there. In future by giving antioxidants the effect can be studied in these dental caries patients.

UG : 10 COMPARISON OF Hb INDICES DONE BY SAHLI AND CYSMETHEMOGLOBIN METHOD

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For haemoglobin estimation at present two methods are popular. One is the Sahli method which is in practice in most of the medical colleges for teaching the students for their exercise. The other method, the cysmethemoglobin method is popular in some biochemical laboratories. In the present study both methods were compared by estimations Hb in same sample of blood. The results indicate significant lower volumes by Sahli method.

UG : 11 COMPARATIVE STUDY OF PULMONARY FUNCTION OF HEALTHY MALE AND FEMALE SUBJECTS OF AGE GROUP OF 18-25 YEARS OF LUCKNOW CITY

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Lung function values are related to sex, age, height, weight, smoking habits, ethnic groups, geographical locations and such other factors. Due to variation in above factors the predicted formulae given by Western Physiologists are not applicable to India.

With the above view, we have planned to undertake the study with reference to sex, age, height and weight of pulmonary status of normal young healthy adults (18-25 years). In the study 200 males and 150 females subjects have been selected so far for P.F.T. from students of K.G's Medical College, Lucknow, University of Lucknow and other colleges. F.V.C., F.E.V. and P.E.F.R. were the parameters of lung function taken into account and the machine used was Medspiror. Readings of male and females were compared and significant differnce in F.V.C., F.E.V. and P.E.F.R. values were obtained.

UG : 12 INCIDENCE OF HYPERTENSION IN WOMEN ON THE BASIS OF SOCIO-ECONOMIC STATUS AND PHYSICAL ACTIVITY

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Hypertension is characterised by sustained elevation of systemic blood pressure. About 20% of adult population in India is afflicted with hypertension.

The present study was carried out on 206 women between 20-50 years of age living in different localities of Lucknow. The study population was classified according to their socioeconomic status (high, medium and low) and the degree of physical activity they performed (sedentary work or heavy physical work).

28 out of 72 women (38.8%) of the high socioeconomic strata were hypertensive. In it 16 women were psot menopausal. In the medium strata, 16 out of 80 women were hypertensive. 12 of them were post menopausal. In the low group only 2 women were hypertensive out of 54, both being post menopausal.

Out of 120 wome with sedantary habits 44 had hypertension. Among 86 women who did heavy physical work, only 2 were hypertensive.

In age group I (20-35 years) only 9.3% women had hypertension (BP systolic 128±18, diastolic 102±12). In the age group II (35-50 years), 43.5% women were hypertensive (B.P. systolic 142±12, diastolic 108±14).

In conclusion, the incidence of hypertension was significantly higher in the post menopausal women belonging to high socioeconomic status of society and those leading a sedentary life.

The data is statistically analysed in the paper which will be presented in APPICON '97.

PG : 01 EFFECTS OF YOGASANA PRACTICE AND GYMNASTICS ON REACTION TIMES (RTs)

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Early man's ability to survive depends primarily on physical fitness are influenced by yogasana and gymnastics. These exercises improve the sensory motor performance, and hence Reaction-time provides a quantitative measurement of these beneficial effects.

Random and Alert RTs, Auditory Reaction Time, visual reaction Time and cutaneous Reaction Time of both the hands were measured in 50 healthy male subjects of age group 18-25 years who were not exposed to any type of exercise, sports, or yogic postures previously. These subjects were divided into two groups Y and G, their RTs were again measured after one month of yoga training and gymnastics training respectively.

1. Right hand RTs were shorter than the left hand RTs before ($p<0.001$) and after the training programmes ($p<0.001$) in both the groups (Random and Alert).
2. Both type of training programmes have reduced the RTs (Random and Alert). $p<0.001$ in both the cases.
3. There was greater numerical reduction in Random RTs in group G, while there was a greater numerical reduction in Alert RTs in group Y.

Key Words : Auditory Reaction Time, Visual Reaction Time, Cutaneous Reaction Time, Yogasana, Gymnastics.

PG : 02 ROLE OF MAGNESIUM IN BORDERLINE HYPERTENSION

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The possible role of magnesium ion (Mg^{++}) in the pathogenesis of essential hypertension has recently received increasing attention. Reduction of Mg^{++} in smooth muscle preparation in vitro increases vascular tone and potentiates the pressor action of angiotensin II. Mg^{++} has been shown to counter the vasoconstrictor action of calcium ions. Excess Mg^{++} will block and deficiency of Mg^{++} will potentiate the action of calcium. In a sense Mg^{++} may be considered nature's physiological calcium blocker.

In this study total number of cases observed were 30 which includes 10 control and 20 borderline hypertensive cases. Age group was 22±2 for both groups. For hypertensive cases average systole B.P. was 142±4 and diastolic B.P. 92±4, for control group average systolic B.P. 126±6 and diastolic B.P. 84±2 was observed.

In both groups serum Mg was estimated by Mg kit method. Serum Mg in the hypertensive group was 1.68±0.14 and in control group was 1.74±0.08 observed and it was statistically analysed.

PG : 03 NIMODIPINE POTENTIATES ANALGESIC EFFECT OF AN OPIOID AND NSAID IN POSTOPERATIVE PATIENTS

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Recently a preliminary study showed that nimodipine (NM) potentiates morphine analgesia in patients with cancer pain who had needed successive increments of morphine. The present study was undertaken to investigate the effect of NM in postoperative patients, whether NM would potentiate the analgesic effect of diclofenac sodium and meperidine following different surgical procedures.

Total 100 postoperative patients (Hernioraphy, Fistulectomy, hydrocoelectomy, cholecystectomy, MRM and prostatectomy) were included in the study, after routine investigations. Patients were divided in to 4 groups of 25 each. Group I control-received diclofenac sodium 60 mg i.m., Group II - (NM 30 mg, p.o. single dose + Diclofenac sodium, Group III control - meperidine 50 mg i.m. and Group IV - NM 30 mg p.o. + meperidine. Pain was assessed using a linear visual analogue scale (LVAS). Effects of diclofenac sodium + NM and meperidine + Nm were compared with patients only receiving either diclofenac sodium or meperidine (students 't' test). NM significantly potentiated diclofenac sodium and meperidine induced analgesia in postoperative patients.

PG : 04 COMPARISON OF BRONCHODILATOR EFFECT OF INHALED SOLBUTAMOL AND IPRATROPIUM BROMIDE IN NORMAL SUBJECTS

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Response to two bronchodilators, Salbutamol and Ipratropium bromide was assessed in thirty, apparently healthy subjects of either sex over two days. The subjects were divided into three groups according to their age. Group I - 15 to 30 yrs, Group II - 31 to 45 yrs and Group III - 46 to 60 years. Pulmonary function tests (PFT) measuring FEV_1, FVC, FEF_{50}, F_{25-75}% and PEFR were performed on each subject prior to inhalation of drug. 20 minutes after inhalation of 200 μg of Salbutamol and 20 minutes after inhalation of 80 μg of Ipratropium Bromide on first day. On second day, PFT's were done prior to inhalation of 80 μg of Salbutamol and measurement of pulmonary function after 20 minutes.

It was observed that Ipratropium Bromide had shown more but not significant bronchodilation in comparison to Salbutamol. It was concluded that there was a parasympathetic predominance and there is no change with age in autonomic control of bronchomotor tone. Also, it was observed that of all the parameters measured. $F_{25-75\%}$ and FEF_{50} exhibited most striking changes when expressed as percentage of the baseline value.

PG : 05 INTELLIGENCE AND REACTION TIMES - PSYCHOPHYSIOLOGICAL APPROACH

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There are few studies in literature on Intelligence and Reaction Times which have shown negative correlation between psychometric intelligence and Reaction Times. The present study aims at evaluating intelligence and its correlation with Reaction times. On 62 boys and 63 girls (Total N = 125) healthy children of nuclear educated families, aged 13-14 years selected from a local English medium school.

The intelligence was evaluated by verbal (OTIS - self administering test of Mental Ability) and nonverbal SPM (Standard progressive matrites) methods. The reaction times for visual, auditory and cutaneous (Rt. and Lt. sides) were recorded by using electronic response analyser under ideal physiological conditions.

Statistical analysis of the data showed a negative correlation with all the reaction time measurements with SPM in the study group. There is perfect correlation between verbal and nonverbal intelligence (p=0.001). All the reaction times are correlated with one another (p=0.001). X^2 test showed no significant relation between sex and SPM whereas verbal intelligence was influenced by sex (p=0.001).

Mann Whitney U Test : showed significant difference in intelligence (verbal) by sex. But failed to show difference in non verbal intelligence and sex. In the present study Girls appear to do well with both verbal and non verbal scores. However, boys appear to be faster than girls in their reaction times.

Key Words: Intelligence, Reaction times (RTs), Verbal (OTIS), Nonverbal (SPM), Auditory, Visual Cutaneous Reaction Times (RTs)

PG : 06 EFFECTS OF TOBACCO CHEWING ON SIMPLE AND DISCRIMINATION REACTION TIMES

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Few studies have been conducted in regards to use of smokeless tobacco (Chewing tobacco and snuff) and reaction time. Simple reaction time to auditory, visual and cutaneous stimuli and discrimination reaction time to auditory and visual stimuli were studied in twenty five male tobacco chewers and twenty five male non tobacco chewers in the age group of 20-25 years. Chewing a packet of Gutkha has significantly shortened both simple reaction time and discrimination reaction time for either hand in tobacco chewers. It could be due to stimulant action of nicotine on central nervous system and sympatho adrenal system. Thus reaction time measurements provide a suitable, convenient test based on simple as well as discriminative tasks for psychophysiological effects of compounds present in the Gutkha chewing affecting the central nervous system and can be recommended for studying changes in motor and psychic functions.

Key Words: Simple reaction time, discrimination reaction time, tobacco chewing.

PG : 07 EFFECT OF SUBICULAR LESIONS ON SLEEP-WAKEFULNESS CYCLE AND HIPPOCAMPAL THETA ACTIVITY

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The combined lesions of etorhinal cortex and subiculum is known to alter the sleep wakefulness cycle and the hippocampal theta activity in rats. In the present study the effect of selective bilateral ibotenate lesions of subiculum on the sleep wakefulness cycle and hippocampal theta activity was evaluated. 30 day old male Wistar rats were implanted with EEG, EOG and EMG in CA1 region of hippocampus, external canthus of eye and dorsal neck muscle respectively. The polysomnographic recording of sleep-wakefulness cycle for six hours and power spectral analysis of hippocampal theta activity was studied. The results revealed a significant decrease in the duration of W2 and stage 1 and an increase in stage 2 and REM duration in subicular lesioned rats. The power and the percentage of theta activity was significantly increased in REM sleep, whereas no such changes were observed in wakefulness. However, theta frequency was not altered both during wakefulness and REM sleep. The study suggest that the subiculum may be involved in the regulation of the sleep wakefulness cycle and the maintenance of the hippocampal theta activity.

PG : 08 THE LEVELS OF NORADRENALINE, DOPAMINE AND SEROTONIN IN DISCRETE BRAIN AREAS OF THE CLOMIPRAMINE ANIMAL MODEL OF DEPRESSION

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The levels of noradrenaline, dopamine and serotonin were estimated in rats, which were depressed by the neonatal treatment of clomipramine. To develop depression the rat pups were injected with clomipramine subcutaneously twice daily at a dose of 22.5 mg/kg from day 8th to 21st. Then after 3 months the depression was assessed using shock induced aggressive behaviour. On the confirmation of depression the levels of noradrenaline, dopamine and serotonin were estimated in different brain regions using HPLC-FD method. Results revealed that the level of serotonin and noradrenaline was decreased significantly ($p<0.001$) in frontal cortex, hippocampus, brain stem, septum and hypothalamus, while the level of dopamine was decreased significantly ($p<0.01$) only in the hippocampus compared to control rats. These results demonstrate the dysfunction of serotonergic and noradrenergic system with lesser involvement of dopaminergic neurotransmission in the clomipramine induced experimental model of depression.

PG : 09 EVALUATION OF NEUROPROTECTIVE EFFICACY OF (-) DEPRENYL IN SPINAL CORD ISCHEMIA WHEN ADMINISTERED AT DIFFERENT TIME POINTS

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Spinal Cord Ischemia (SCI) results in severe motor deficits. The ischemic injuries and treatment requires animal models to correlate the trauma/ischemic related motor abnormalities. The study was aimed to assess the locomotor deficits in SCI using narrow beam maze as well as to appraise the neuroprotective efficacy of (-) deprenyl when administered at different time periods post-ischemically. Adult male Wistar rats were trained on a narrow beam maze, those animals which have reached the criterion of crossing the runway within 3 sec have been chosen for further experiments. During the runway crossing, the errors committed by rats were also noted.

SCI was induced in unanaesthetised freely moving rats by a modified snare ligature for a duration of 30 minutes. After training rats were grouped randomly into (a) sham control; (b) ischemia + saline (c) ischemia + (-) deprenyl (0.1 mg/kg b.w.) administered after 3 or 12 hrs of ischemia; (d) control animals treated with (-) deprenyl alone (0.1 mg/kg b.w.). The (-) deprenyl was administered (i.p.) post ischemically for a period of 14 days).

The results revealed that, the rats subjected to SCI took significantly ($p<0.001$) more time to cross the runway as compared to Sham control and the (-) deprenyl treated groups. The motor deficits observed in SCI might be due to the degeneration of spinal motor neurons at lumbar level. No significant difference was observed between the groups in which (-) deprenyl was administered 3 and 12 hrs postischemically. The behavioural recovery observed in drug treated groups may be due to the ability of (-) deprenyl to enhance in antioxidant enzymes, trophic factors or through the neuroprotective ability of its metabolite such as (-) desmethyl selegiline which in turn reverse the locomotor deficits.

PG : 10 CARDIOVASCULAR RESPONSE AND AUTONOMIC FUNCTION TEST IN DIFFERENT MANOEUVRES IN YOUNG HEALTHY INDIVIDUALS

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The aim of present study is to examine the effect of posture and exercise on heart rate and blood pressure. The study was performed on 25 young healthy adults of 17-25 years of age. The height and weight were recorded and surface area of the subjects were calculated.

After 10-30 minutes of rest the blood pressure and electrocardiogram were recorded. The same parameters were recorded during squatting, standing and lying down postures.

The changes in heart rate from squatting to standing was highly significant, from standing to lying down was very significant and from resting to squatting was significant. The details of the results will be discussed.

Key Words: Cardiovascular response, Autonomic functions, heart rate, blood pressure.

PG : 11 POST-TASK ERP CORRELATES OF INTELLIGENCE IN NON-PATIENT SUBJECTS

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The event related potentials (ERP) were measured in 23 normal male subjects aged between 18 and 22 yr. The subjects were grouped according to their IQs (as measured by WAPIS-PR): those with IQ <110 were placed in group I and those with IQ >120 were placed in group II. ERPs were recorded twice in each subject, before and after the administration of a mental task. The task comprised repeating, in reverse order, a string of random digits read out to the subject at an uniform speed of 1 per second. The string length of the numbers was mostly 5, but was increased or decreased in steps of one depending upon the performance of the subject in order to sustain his motivation. The latency and amplitudes of the P_{300} recorded before and after the task were compared statistically. The P_{300} latency increased significantly ($p<0.05$) following the task in both the groups (post-task minus pre-task latency were 10.4 ± 7.69 mS in Gp I and 15.6 ± 22.6 mS in Gp II) but the amplitude did not change significantly following the task in either group (post-task minus pre-task amplitude were 0.51 ± 3.52 μV in Gp I and 1.93 ± 5.16 μV in Gp II). The increase in latency appeared to be greater in group II than in group I suggesting that during problem solving subjects with higher IQ probably recruit more extensive neural circuitry, presumably involving the hippocampus which is the generator site for P_{300} response.

PG : 12 COMPARATIVE STUDY ON SERUM LACTATE, INORGANIC PHOSPHATE AND OXYGEN DEBT IN VOLUNTARY AND ELECTRICALLY INDUCED MUSCULAR EXERCISE

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The present study was conducted in 20 male medical students between 18-22 years and divided in 2 groups of 10 each who carried out voluntary (Ev) and electrically induced (Eel) exercise respectively. Before training sessions both groups were subjected to acute intense ergometric exercise at 100 watts for 5 minutes. As a result of this plasma Pi increased by 3.82 mg/100 ml whereas plasma lactate showed a rise by 10 mmol/lit. in the Ev group. In the second group carrying out electrically induced exercise, the plasma Pi and lactate showed marked increase by 3.4 mg/100 ml and 9.6 mmol/lit. respectively. Subjects in the Ev group were trained on bicycle ergometer at the rate of 50 watts for 20 minutes everyday for 8 weeks. Electrically induced exercise was instituted by stimulating both gastrocnemius muscles through carborised rubber electrodes at the rate of 40 contractions/min. for 20 minutes everyday for 8 weeks. After the training session was over in both groups they were subjected to acute exercise again as in pretraining session. It was found in the Ev group that a rise in plasma Pi and lactate was not as much as in pretraining session and they increased only by 2 mg/100 ml and 6.92 mmol/lit. respectively. However, the biochemical responses were not as severe in Eel group and plasma Pi showed increment by 2.5 mg/100 ml and the plasma lactate increased by 8.3 mmol/lit. As a result of training the oxygen debt showed marked decline by 3.4 lit. in the Ev group whereas in Eel it decreased by only 1.6 lit. The results suggest that in both types of training there is less production of anaerobic metabolites as well the subjects incur lesser oxygen debt.

PG : 13 EFFECT OF IRON DEFICIENCY ANAEMIA ON BRAIN STEM AUDITORY EVOKED POTENTIALS (B.A.E.P.)

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Studies have shown iron deficiency to be associated with deranged brain function including behavioural alterations, developmental deficits and decreased cognitive skills. The present study reports on electrophysiological evidence of sensory dysfunction in iron deficiency anaemic patients as shown by the effects of anaemia on brain stem auditory evoked potentials.

22 anaemic subjects (mean Hb 10.4±2/8 g/dL, MCV 78.3±13.3 fl MCHC 31.0±2.6 g/dL, TIBC 3.5±0.8 mg/L, S. Iron 0.65±0.4 mg/L) were tested against 7 controls with normal haematological profile. The significance for brain stem auditory evoked potentials was assessed between the 2 groups for changes in absolute peak latencies, inter peak latencies and amplitudes of the BAEP waves. The anaemic group was found to have a significant delayed latency of wave I and II and inter peak latency of I-V together with a reduced amplitude of wave I indicating a delayed conduction in the lower brain stem auditory pathways. Anova test has revealed specific correlation between the haematological and BAEP parameters of anaemic patients indicating that more severe the anaemia the more delayed is the latency and more reduced the amplitude at the waves. These findings suggest that functional integrity of the auditory pathway in the brain stem is dependent upon the normal haematological profile of the person.

PG : 14 ANTI-DIARRHOEAL ACTIVITY OF IXORA COCCINIA LINN.

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The plant Ixora coccinia linn. is indigenous to India and various other countries. The root and flowers of the plant are used in dysentery (Nadkarni 1954) and leaves are used in diarrhoea (Wealth of India, 1959).

Aqueous extracts of leaves and flowers were used to study antispasmodic activity against known spasmogens in guinea pig ileum, effect on gastrointestinal motility in mice and castor oil induced diarrhoea in rats (Niemegeers and Jensen, 1972).

Results:

1. Acute toxicity in mice showed that no mortality occurred in mice over a 72 h period, when the extracts were used in doses of 2 G/Kg.
2. Chemical tests revealed presence of alkaloids and tannins.
3. Both extracts produced a dose-dependent inhibition of Ach-induced contraction on g.i. ileum. The flower extract was seen to be more potent than leaf extract. The extracts failed to block histamine and barium chloride induced contractions.
4. The ED-50 of leaf extract was 1030 mg/kg and flower extract was 1020 mg/kg on gastrointestinal propulsion in mice.
5. The ED-50 of leaf extract was 400 mg/kg and that of flower extract was 360 mg/kg in castor oil-induced diarrhoea in rats.

When compared to loperamide (ED-50: 0.29 mg/kg) the extracts were much less active.

PG : 15 SYNAPTOGENESIS IN RAT RETINA - AN *IN VIVO* AND *IN VITRO* STUDY

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Synapses, the structural and functional determinants of neural connectivity, are the sites where information is processed and modulated. Retina comprises of a unique type of synapse called ribbon synapse, in addition to the conventional type. The formation and maturation of these two types of retinal synapses were studied both in vivo and in vitro using electron microscopy. Retinae of postnatal stages P0 to P14 as well as cultured retinal neurons of different developmental stages were studied. Our observations show that the ribbon synapses appeared at P6 in the outer plexiform layer (OPL) of intact retina. In the inner plexiform layer (IPL) they were initially observed at P6 as electron dense material in presynaptic terminal which emerged as a ribbon like structure amidst synaptic vesicles by P8. Conventional synapses were rarely encountered in OPL but commonly seen in IPL. The synaptic densities appeared in IPL at P2 and by P6 well developed synapses were observed along with vesicles. In the case of cultured retinal neurons, both ribbon as well as conventional synapses were observed. The processes emerged from the neural aggregates as early as 3 days in vitro. However, the synaptic densities and vesicles were clearly seen only at 6 days in vitro which was comparable to the findings in the in vivo retina. The importance of this study in terms of the factors governing synapse formation and generation of intrinsic electrical activity in the retinal circuitary before the eyes open will be discussed.

PG : 16 AMLODIPINE AND ITS EFFECT ON MENTAL PERFORMANCE IN MILD TO MODERATE HYPERTENSIVES

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In this study behavioural responses were studied in hypertensives receiving amlodipine therapy. Patients of both sexes selected were having mild to moderate hypertension. They were examined to exclude the presence of any COPD or secondary hypertension. Smokers and alcoholics were also excluded. After a 2 weeks of placebo washout period, patients were put on amlodipine for 6 weeks. Behavioural responses which included psychological tests and cold pressor test (CPT) as a stress test were performed at the end of placebo washout period and then at the end of 6 weeks of therapy with amlodipine. Results showed that amlodipine treatment significantly improved the scores of memory and orientation as compared to untreated hypertensives and there was a significant decline of rise of heart rate and systolic blood pressure and diastolic blood pressure after CPT, these results indicate amlodipine is not only an effective antihypertensive agent but also improves higher brain functions including responsiveness to CPT.

PG: 17 A STUDY OF PULMONARY FUNCTION IN TRAFFIC POLICEMEN OF LUCKNOW

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The present study is an attempt to correlate the effects of air pollution of the city with the pulmonary functions of traffic policemen. The study is comprised of 73 male traffic policemen (age 33±7 years) and 20 normal healthy subjects of same age group and sex as control. In each case PFT was done by "MEDSPIROR" in the department of Physiology, KGMC, Lucknow. It was observed that out of 73 cases, PFT of 18 cases were within normal limits. In the remaining 55 cases the values of FVC, FEV_1 and FEV_1/FVC were found significantly lower ($p<0.05$) as compared to control.

PG : 18 INFLUENCE OF PRE-ECLAMPSIA, MATERNAL AGE AND MEAN BLOOD PRESSURE ON LIPID PROFILE

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Forty pre-eclamptic and twenty normal pregnant women in third trimester of pregnancy were selected from Gynae and Obs Inpatient Department of J.N. Medical College, Aligarh. Exclusion criteria were associated renal, hepatic, cardiac disease, a metabolic disorder like diabetes mellitus and past history of hypertension. The pre-eclamptic women constituted the study group, while the normal 20 were controls for comparison. Intracubital venous blood was collected early morning on empty stomach and analysed for serum triglycerides (TG), Cholesterol (Chol), HDL, LDL, VLDL, phospholipids (PL) and total lipids (TL). Resting blood pressure was recorded on three occasions and mean blood pressure was calculated (Diastolic + 1/3 pulse pressure).

Observations indicate that serum TG, Chol, LDL, VLDL, PL and TL were significantly raised ($p<0.05$) while the HDL level was significantly lower ($p<0.01$) in pre-eclampsia as compared to normal pregnancy. Subjects were grouped into two according to age (i) below 25 years (ii) above 25 years. In higher age group (above 25 years) TG ($p<0.02$) and VLDL ($p<0.001$) were increased significantly. The subjects when grouped according to level of mean blood pressure into two (i) upto 115 mmHg (ii) above 115 mmHg, it was observed that TG ($p<0.001$), Chol ($p<0.02$), VLDL ($p<0.001$), PL ($p<0.02$) and TL ($p<0.02$) were significantly higher in subjects with higher blood pressure. To exclude the influence of age comparison was made between two levels of BP in the same age groups. While TG and VLDL increased with BP in both groups, HDL decreased only in subjects above 25 years.

Findings of the present study suggest that lipid profile shows a direct correlation with pre-eclampsia, age of mother and mean blood pressure.

PG : 19 EFFECT OF TRANSCENDENTAL MEDITATION ON BLOOD PRESSURE AND SERUM CHOLESTEROL

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The effect of Transcendental Meditation (TM) on blood pressure and serum cholesterol was determined in a group of subjects. Some were hypertensive with elevated cholesterol level. Rest were normal. All were durg free. Blood pressure and serum cholesterol were measured at the beginning and end of a three months period who regularly practised T.M.A Control group were similarly followed for three months. Comparison showed significant reductions of blood pressure and serum cholesterol in subjects who practised T.M. These short term results suggest the possibility of T.M. in the control of blood pressure and serum cholesterol. However, a further long term study will be conclusive.

PG : 20 DEPENDENCY OF GROWTH HORMONE RELEASE ON THYROID HORMONE SECRETION

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Growth hormone (GH) synthesis and release are critically dependent on thyroid hormone. These actions are mediated by regulation of the transcription rate of the GH gene and its influences upon hypothalamic GH releasing hormone (GHRH) and somatostatin secretions. Blunted GH response to its various secretogogues (GHRH, sleep, insulin induced hypoglycemia and arginine) which acts via several different pathways, have been demonstrated in hypothyroid individuals in the past. To evaluate the influence of thyroid hormone on adrenocepter mediated GH release, 10 established and untreated cases of juvenile primary hypothyroidism were tested for GH response to

clonidine. The responses were found to be blunted (maximum rise of less than 7 ng/ml over the basal values, within 2 hours of clonidine) in all the patients, contrary to 8 sex, weight and body surface area matched euthyroid controls (with maximum rise of more than 7 ng/ml over their basal values). It can therefore be suggested that thyroid hormone stimulates GH secretion by its direct action on somatotrophs rather than affecting the prior neuro-endocrine regulatory machinery.

PG: 21 PLATELET ANTIOXIDANT STATUS AND HETEROGENEITY OF PLATELET CATALASE IN DIABETES MELLITUS

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Many potential mechanism may explain why poor glycemic control in diabetes predicts vascular damage. Several biochemical pathways associated strictly with hyperglycemia can increase the generation of reactive oxygen species (Oxidative stress) which may be highly responsible for the pathophysiologic changes associated with diabetes mellitus.

In this endeavour, in our work platelet free radical scavengers [superoxide dismutase (SOD) and catalase], lipid peroxidation (MDA) and effect of oral vitamin E administration on altered oxy free radicals of platelet were studied in 60 diabetic patients and in matched healthy controls. Platelet catalase has been partially purified and in vitro effects of various amino acids, chelating agents, anti oxidants substances and metal ions were seen.

Significantly high units of catalase (1.420±0.282), MDA (1.242±0.262), and lower units of SOD (0.442±0.062) were found in platelet of diabetic patients than in healthy controls. Catalase (0.362±0.092), MDA (0.464±0.162), SOD (9.10±0.082). Administration of vitamin E tends to normalize the levels of platelet SOD, Catalase and MDA. Activity of diabetic platelet catalase was specifically increased by in vitro pre-incubation with Mn^{++}, than that of healthy controls. On electrophoretic separation and specific Benzidine - Hydrogen peroxide staining for catalase two separates bands were obtained, indicating heterogeneity of diabetic platelet catalase.

PG: 22 PREVALENCE OF HOMOCYSTINURIA IN NON-PREGNANT NORMOTENSIVE WOMEN, NORMOTENSIVE PREGNANCY AND IN HYPERTENSIVE PREGNANCY

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Homocystinuria is a rare overflow amino aciduria, transmitted as autosomal recessive. Commonest cause is deficiency or absence of cystathionine beta synthase which converts homocystine to cystathionine. Rarely enzymes involved in the remethylation of homocystine are involved. Homocystinuria patients are predisposed to intravascular thrombosis. Pre-eclamptic toxaemia (PET) is a condition with increased thrombotic tendency and the aim of the present study was to compare the prevalence of homocystinuria in hypertensive pregnancy with that of normal population. Urine samples from subjects with hypertensive pregnancy (81), normotensive pregnancy (79), and nonpregnant normotensive women of comparable age group in their luteal phase (77) were analysed by the Cyanide Nitroprusside test. Representative samples were subjected to paper chromatography. It was observed that 45.6% of PET patients, 39% of normotensive pregnant controls and 38% of non-pregnant normotensive women had homocystinuria. The difference is not statistically significant. It is concluded that Homocystinuria is much more prevalent in the population studied, compared to western countries. It could be due to heterozygous cystathionine beta synthase deficiency (frequency 1:70 to 1:200 according to different authors), or deficiency of vitamin B6, B12 or folate, all of which can elevate homocystine in serum. Further, homocystinuria may not be a predisposing factor for PET.

PG: 23 EFFECT OF CARDIPRO-A POLYHERBAL PREPARATION IN THE THERAPY OF ANGINA PECTORIS

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Although there are new numerous agents available for the therapy of coronary artery disease (CAD), which is the most common cause of death in elderly people all over the world, however, none of them are able to prevent the progress of the disease or to prevent the impending heart attack (myocardial infarction). In ancient Indian Medical Science (AIMS) several preparations are described for heart diseases. In the present study, therefore, taking lead from AIMS, a polyherbal preparation Cardipro has been clinically evaluated in patients of angina pectoris. The results of the present study showed that the drug was able to reduce the symptoms of angina. It is, therefore, suggested that a larger study be done.

Poster : 01 METRONIDAZOLE NEUROTOXICITY - A TYPE "C' DRUG REACTION

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Amongst the imidazole derivatives metronidazole is the most commonly prescribed drug. Acute toxicity of metronidazole is very well reported, however, there are scant reports on its long term toxicity. Hence, in the present prospective study an attempt was made to evaluate the neurotoxic potential of metronidazole and to classify the type of adverse drug reaction. Seventeen patients requiring metronidazole (400 mg tid) for various medical ailments on a long term basis of 2 to 4 weeks exhibited neurophysiological changes involving both motor and sensory nerves. It was maximum when the drug was given for more than 3 weeks duration. In the upper limbs motor conduction velocity was significantly reduced in the ulnar nerve ($p<0.02$). The sensory components of median and ulnar nerves were not involved. In the lower limbs the distal latency of sural nerve was significantly prolonged ($p<0.02$) with delay in nerve conduction velocity ($p<0.1$). The serum concentration of metronidazole as determined by H.P.L.C. method averaged 10.5 µg/ml and 16.5 µg/ml at less than and more than 3 weeks duration respectively. This is not significantly different from average plasma concentration of metronidazole in normal healthy volunteers (15.5 µg/ml). These values lie within the normal range of plasma concentration of metronidazole. These values lie within the normal range of plasma concentration of metronidazole. This shows that the metronidazole induced neurotoxicity belongs to type C adverse drug reaction or duration dependent toxicity as described by Saxena, 1992 which states that even when the plasma concentration of the drug in the systemic circulation remains within normal range but continued exposure of the drug produces duration dependent adverse drug reaction.

Reference: Saxena RC. Overview of ADR and its relation with nutrition. Fifth World Conference on Clinical Pharmacology and Therapeutics, July 26 to 31, 1992, Yokohama, Japan.

Poster : 02 COMPARISON OF PERIPHERAL ABSOLUTE BASOPHIL COUNT BY FUCHS-ROSENTHAL AND NEUBAUER CHAMBER

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The aim of present study was to know if the improved, Neubauer Chamber can be used instead of Fuchs-Rosenthal mentioned in the standard technique. To study this the peripheral absolute basophil count was done in both the chamber in 25 subjects by Cooper and Cruik Shank method. The mean basophil counts were 40.85 ± 7.56, and 42.18 ± 6.97 per cubic millimetre by Fuchs-Rosenthal and Neubauer Chamber respectively. On statistical analysis it was found that the difference was not significant, indicating that both the chambers can be used for doing the counts. Further details of method, time interval and about the different chamber will be discussed.

Poster : 03 ANALYSIS OF VARIATIONS AMONGST PATHOGENIC MICROORGANISMS USING THE PCR-BASED RAPD TECHNIQUE

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The polymerase chain reaction technique was revolutionised not only the molecular biology but also microbial strain typing and identification. The primary reasons for this include the high sensitivity, rapidity, high-throughout scaling and reliability of the technique. Random amplification of polymorphic DNA (RAPD) is one such PCR-based technique, that has been employed for the determination and analysis of genetic variation in case of a large number of organisms including the micro-organisms. We report here the application of this powerful technique for the analysis of dermatophyte fungi (*Trichophyton* species) and species of bacterial enteric pathogens. In case of the *Trichophyton* species the RAPD profiles help to delineate the species while in case of enteric bacteria, both inner- as well as intra-species RAPD profile variations have been determined.

Poster : 04 EFFECT OF EXAMINATION STRESS ON SOME METABOLIC PARAMETERS

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Mental stress is one of the causative factor of Atherosclerosis and coronary artery diseases (CAD). As a result of stress there is liberation of catecholamines, ACTH etc. which cause an increase in the metabolic rate of cells.

In this study the effect of examination stress was studied on Oxygen uptake, carbon dioxide output, respiratory exchange ratio (R.E.R.) and resting metabolic rate (R.M.R.) in 12 medical students. The parameters were studied on four occasions on a sport's day (control), prior to third terminal examination (pre-terminal), before professional examination (pre-professional) and after declaration of results (post-professional) in each students.

Oxygen uptake and carbondioxide output was measured by Noyon's differometer and the R.E.R. and R.M.R. (Resting Metabolic Rate) were measured by the calculations from O_2 uptake and CO_2 output. The students were asked to take isocaloric diet of 2000 calls, with maximum 50 gm of fats two days prior to each measurement.

It was observed that the oxygen uptake, CO_2 output, respiratory exchange ratio (R.E.R.) and Resting metabolic rate (R.M.R.) were increased from control period to pre-terminal and pre-professional period and returned back to near control value after the professional examination with declaration of results. However, the increase in various parameters were not statistically significant.

Poster : 05 A STUDY OF THE EFFECT OF SAHAJA YOGA ON REACTION TIME AND AUTONOMIC NERVOUS SYSTEM

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Auditory reaction time (ART), visual reaction time (VRT), galvanic skin resistance (GSR), E.C.G. and Cold pressor test were studied in a group of 30 subjects aged 17 to 18 years in three groups of 10 subjects each. Group I performed Sahaja Yoga, Gp II performed mimicking exercises and Gp III served as control group. Sahaja Yoga was conducted in the Department of Physiology, L.H.M.C., under the grace of Mataji Shri Nirmala Devi by trained Sahaja Yogis. Recordings were taken at the beginning and at the intervals of 4 weeks, 8 weeks and 12 weeks. The recordings for the group performing Sahaja Yoga showed a significant decrease in heart rate, a significant decrease in blood pressure, a significant decrease G.S.R., a significant response to cold pressor test, a significant response

to valsalva and a significant decrease in auditory and visual reaction times. The Gp II and Gp III subjects did not show any significant changes from basal values. Therefore, Sahaja yoga was seen to improve performance, decrease sympathetic activity, increase parasympathetic activity and hence a greater balance of the autonomic nervous system.

Poster : 06 STUDY OF AUDITORY AND VISUAL REACTION TIME DURING PREMENSTRUAL PHASE

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A study of auditory reaction time, visual reaction time and body weight was carried out on thirty healthy female subjects of age between 17 to 19 years during premenstrual and postmenstrual phase. It was observed that during premenstrual phase there was increase in body weight and increase in auditory as well as visual reaction time. These changes suggest that there is decrease in sensory motor function during premenstrual phase probably because of modulating effect of hormones in neurotransmitters in central nervous system.

Poster : 07 SOMATOSENSORY EVOKED POTENTIALS IN PATIENTS WITH PERIPHERAL VASCULAR DISEASE

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There is ample literature available on neurophysiological studies on neuropathies associated with various disease entities like leprosy, diabetes and other metabolic neuropathies. Literature is rather silent on electrophysiological work up in neuropathy associated with peripheral vascular diseases. It has been debated whether chronic ischemia per se could cause morphological and functional abnormalities in peripheral nerves. Pathological changes in peripheral nerves following ischemia are dependent on the duration and degree of ischemia. Progressive axonal degeneration of both, myelineated and unmyelinated fibres following chronic ischemia and hypoxia of peripheral nerves is well known. However, functional alterations following these changes in peripheral nerves as a result of peripheral vascular disease has not been studied earlier.

Evoked potentials in response to stimulation of the posterior tibial nerve at the ankle were recorded from the spinous process at C2 and Cz in 10 patients of peripheral vascular disease primarily involving the lower limbs. The potentials recorded from C2 revealed sharp negative peaks with the peak latency of more than 30 ms (N-30). Scalp recording with Fz showed one or two small waves (P 31 and 33) prior to the primary cortical response (P40). Average latencies and amplitudes of the spinal and cortical evoked potentials as well as interpeak intervals were calculated to confirm the diagnostic significance of these parameters.

Detailed methodology and interesting observations in these ten patients of P.V.D. are presented by authors in the form of colourful posters.

Poster : 08 PREVALENCE OF OVERWEIGHT AND OBESITY IN A FERTILIZER INDUSTRY IN GOA

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Sixty male subjects in the age group of thirty to forty years working in fertilizer industry were selected for this study. They were divided into two groups. Group I consisted of twenty five subjects and were administrative staff. Group II consisted of thirty five subjects and were factory workers. According to Body Mass Index these subjects were categorised into obese, Overweight, normal and below normal. In the pre-employment checkup it was found

that none of the employees were obese. Among the administrative staff 10% of the staff were overweight, 64% were normal and 26% were below normal. Among the worker class 3% of the staff were overweight; 75% were normal and 22% were below normal. During the checkup five years after employment it was found that there was generalised increase in weight of employees in both the groups. Among the administrative staff 10% were found to be obese, 37% were overweight, 48% were normal and 5% below normal. Among the worker class 9% were found to be obese, 37% were overweight, 50% were normal and 4% were below normal.

Poster : 09 THE STUDY OF LUNG FUNCTION TESTS IN COTTON MILL WORKERS

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The changes in lung function tests, in workers exposed to cotton dust was studied in a total of two hundred and fourteen workers belonging to textile mill in MIRAJ. Out of the total 214 workers studied 23 workers (10.74%) showed symptoms of by-ssinosis.

An analysis of F.V.C., $F.E.V._1$, F.V.C./$F.E.V._1$ and P.E.F.R. in exposed and control group showed that in both these groups there occurs a decrease with year of experience.

Poster : 10 EFFECT OF EMBLICA OFFICINALE OF SUPEROXIDE DISMUTASE AND LIPID PEROXIDATION IN LIVER AND BRAIN

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Emblica officinalis (Amla) is one of the most important constituents of Rasayana preparations of Ayurvedic medicines. It is one of the major constituent of Chyavan Prash, a well known Ayurvedic preparation claimed to be rejuvinator. In the present study, therefore, it was thought worthwhile to investigate its antioxidant activity in rat brain and liver by studying the superoxide dismutase activity and lipid peroxidation. Two batches of albino rats were given Emblica officinalis 1 gm/kg body weight for one week and one month, respectively. Enzymatic activity of SOD was determined by autooxidation of epinephrine at alkaline pH in liver and brain homogenate (30%, w/v). Lipid peroxidation was measured by estimating malondialdehyde content by thiobarbituric acid test. Present observations showed enhanced enzymatic activity of SOD with time dependent treatment in liver tissue with no effect on brain SOD activity. Consequently, the MDA formation was decreased on comparison to control studies. The preliminary study indicates Emblica officinalis as an effective antioxidant agent.

Poster : 11 CARDIOVASCULAR RESPONSE TO ORTHOSTATIC STRESS FOLLOWING COLD CHALLENGE IN DIABETICS

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PT. B.D. SHARMA, P.G.I.M.S., ROHTAK.

Cardiovascular responses to cold pressor test (CPT) followed by orthostatis stress were investigated in diabetics and in control subjects. The test was performed by immersing the left hand (up to wrist joint) in water at 8°C for 2 minutes. The blood pressure (BP) and heart rate (HR) were recorded immediately after removal of hand from water in recumbent state and then in erect posture. The orthostatic stress (without cold exposure) caused postural hypotension in diabetics, while in control subjects BP (both systolic and diastolic) increased on attaining erect posture. CPT alone increased HR, systolic blood pressure (SBP) and diastolic blood pressure (DBP) in control as well as in diabetics. In control subjects when CPT was followed by orthostatic stress, a marked statistically significant further increase in HR but fall in SBP was observed, though the increase in DBP was not significant. On the other hand statistically significant increase in HR, and decrease in SBP, DBP were observed in diabetic subjects.

These impairments in cardiovascular responses are confirmative of autonomic neuropathy in diabetic subjects.

Poster : 12 A STUDY OF HYPERCHOLESTEROLEMIA IN HYPOTHYROID PATIENTS

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The present study was undertaken in 106 hypothyroid patients and compared with 61 normal subjects.

The present investigation revealed that hypercholesterolemia in hypothyroidism mainly reflected an elevated level of LDL-cholesterol, serum triglycerides, VLDL HDL-cholesterol levels were found significantly elevated in hypothyroid patients when compared with normal subjects. The increase in the values of LDL-cholesterol rather than HDL-cholesterol was also compared to that of the normal controls. It is observed that males exhibited a significant higher risk of atherosclerosis than females - both in normal controls and in hypothyroid conditions. These data also suggest that concentration of total cholesterol and LDL-cholesterol in serum as well as their relation are the best indicators of lipid derangement in hypothyroidism and could be used for monitoring therapeutic interventions.

Poster : 13 STUDENT'S FEEDBACK ON TEACHING METHODOLOGY AND ASSESSMENT OF ITS EFFECTIVENESS

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In the prevalent "Teacher-Taught" system of Medical Education, students are the consumers. With new ideas emerging in the field of Medical Education teachers adopt various methodologies, which in their opinion are effective in encouraging the students to learn.

The aim of this study was to obtain feedback from the students on the methodology adopted for teaching the physiology of a particular organ system, and to assess the effectiveness of this methodology.

The methodology adopted for teaching the endocrine system physiology to a class of fifty I MBBS students, during a period of 31 hours, was : (a) Lectures based on learning objectives; (b) Home assignments (c) Small Group Discussions; (d) Student's Seminar (e) Case study.

For evaluation of the effectiveness of the teaching methodology, a pre test was given to the students before starting the series of lectures. And, after completion of the period of study, a post test was given. The scores, before and after were recorded.

To obtain feedback from the students, an opinionnaire was designed, which included items on each aspect of the teaching methodology, and was filled out by each student.

Students' knowledge of endocrine system was evaluated finally, by the routine sectional test and viva voce.

Poster : 14 PROBLEMS IN IMPLEMENTATION OF PROBLEM-BASED LEARNING IN INDIA

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Problems based learning approach has been proved to be a simple yet effective alternative to conventional teaching. There have been numerous individual attempts to implement PBL in our country with various degrees of success at different medical college. The virtual obstacles appear to be related to students attitudes, social pressures, unwillingness on the part of the teacher to seek an alternative and rigid examination pattern by the universities. There is a felt need to re-evaluate these problems rather than finding new solutions.

Key Words : PBL, Virtual obstacles.

Poster: 15 EFFECT OF SHILAJIT ON GLYCINE INDUCED HYPEROXALURIA

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Urolithiasis is one of the oldest diseases of the mankind. However, its genesis is still not well understood. Its incidence and recurrence is still very high. Hyperoxaluria is one of the most significant risk factor involved in the process of stone formation. Hence in the present study an effort was made to reduce the hyperoxaluria by using Shilajit (300 mg, 1 kg body wt. p.o.) in albino rats of either sex weighing (150-180 gm). Hyperoxauria was produced by giving Glycine (100 mg/100 gm body weight, p.o.) for a period of thirty days, which produced significant hyperoxaluria (0.674±0.117 mg/24 hrs) as compared to the control (0.279±0.061 mg/24 hrs). There was a significant reduction after the treatment with shilajit along with Glycine given simultaneously for thirty days (0.366±0.052 mg/ 24 hrs) or after 15 days (0.414±0.047 mg/24 hrs). Similarly Shilajit reduced the pH of the urine significantly (7.99±0.60 mg/100 ml) towards the control valves (7.85±0.75 mg/100 ml) from hyperoxaluria values (9.57±0.91 mg/100 ml).

The antiurolithiasis potential of shilajit should be explored.

Poster: 16 EFFECT OF AYUS-82 IN HYPERGLYCEMIA

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The treatment of diabetes mellitus, a common disorder is not yet very satisfactory. Either insulin has to be given in insulin dependent diabetes mellitus (IDDM) or oral hypoglycemic agents in non insulin dependent diabetes mellitus (NIDDM) which have their own undesirable effects. Large number of herbal drugs have been described in our ancient literature to possess hypoglycemic activity. However, none of them is routinely used for the management of diabetes. Thus there is a clear need to find the clinical potential of such drugs in the management of diabetes. In the present study an attempt has been made to evaluate the hypoglycemic potential of AYUS-82 (in varying doses of 2,3 and 4 gms/kg p.o.) against alloxan (100 mg/kg i.p.) induced hyperglycemia (329.80±8.14 mg/100 ml) in rats. The mean weekly blood glucose level was found to be significantly reduced by (2,3 and 4 gms/kg) of Ayus-82 [(125.22±5.29, 111.647±5.31, 104.00±5.11) mg/100 ml] as compared to control (71.65±1.27 mg/100 ml).

It is concluded from the present study that the CCRAS coded preparation of AYUS-82 although produced a significant fall in blood glucose level, but it could not brought down to the normal control values. Combination with Daonil (1.2 gm/kg i.p.) and AYUS-82 (4 g/kg p.o.) has brought down the blood sugar level (98.04±4.118 mg/100 ml) nearer to the normal value (77.99±2.61 mg/100 ml). Further studies are in progress.

Poster: 17 A KINETIC STUDY OF THE MOLECULAR FORMS OF ACETYLCHOLINESTRASE IN HUMAN TERM PLACENTA

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Acetylcholinestrase activity in human term placenta was studied using acetylthiocholineolide as substrate in 2000 x g supernatant in 2000 xg supernatant and its two molecular forms low salt soluble (LSS) and detergent soluble solution (DSS). At high protein concentration and a substrate concentration of 0.5-10 mM the enzyme showed saturation in the hydrolyzing activity. A typical non-linear saturation kinetics at higher enzyme protein concentration was observed, while linearity was observed upto concentration of 0.5 mg enzyme protein/3 ml of standard incubation medium. A linear kinetic during the time period of 26 minutes using 7.5 mM Acetylthiocholine iodide was demonstrated in 2000 x g, LSS and DSS, while the initial rate velocity (Vi) was 0.041, 0.092 and 0.06 in these fractions respectively. Both the molecular forms LSS and DSS were found to be inhibited by higher substrate concentration and this inhibition was abolished by NaF- (10 mM). Lineweaver Bark plot showed linearity from 0.5

6 mMol/L and Km and Vmax values were found to be 2 mMol/L and 0.09 µMol/min/mg protein. pH optimum was not detectable due to rapid autohydrolysis of substrate beyond pH 9.0, but the enzymes showed maximum activity at a narrow pH range of 8.5-9.0. The enzyme showed maximum activity at 37°C in both the 2000 x g supernatant and DSS, however, maximum response in LSS was noted at 27°C. Arrhenius plot of temperature dependence of enzyme activity showed a non linear relationship for log values of 1/Km and 1/Vmax. The enzyme showed considerable stability at 40°C upto 30 minutes and then showed a rapid decline. This thermal instability followed the first order kinetics with a single rate constant for inactivation. The data showed production of relatively large inactivation enthalpies (ΔH) and free energy change (ΔG) for protein denaturation with relatively small values of entropy change (ΔS).

Key Words: Human term placenta, acetylcholinestrase, molecular forms, kinetic study

Poster : 18 A COMPARATIVE TRIAL OF INULA RACEMOSA IN INTERSTITIAL LUNG DISEASE

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Inula racemosa or Pushkarmool is a well know remedy for cough and dyspnoea in India traditional medicine system. Many chemical constituents of root powder of plant are known till date including alantolactone, inunolide and isoalantolactone. Twelve healthy volunteers were selected from general population and thirty patients of interstitial lung disease were selected on the basis of inclusion and exclusion criterion from out patients department of Kasturba Chest Hospital for the present study. On the first day of study pulmonary function test (P.F.T.) of all subjects were performed. Inula racemosa root powder was given to each subject in doses of 1.0 gram three times a day for forty five days. The P.F.T. was performed again and results were analysed.

The results of the study show that there is significant improvement in the values of $F.E.V._1$ (74.4±4.07 from 57.8±2.85) and F.V.C. (69.0±3.86 from 54.0±2.17), but the ratio of $F.E.V._1$ to F.V.C. remains constant in patient of interstitial lung disease. In case of healthy volunteers there is no significant change in different parameters of pulmonary function test. There is significant reduction in the weight of each subject taking Inula racemosa. No side effects were observed during the study except one patient had the complaint of epigastric pain for sometime during the study. The exact mechanism of action of Inula racemosa for improving pulmonary function of patients is not known, but this may be because of its antihistaminic or anti-inflammatory property, which is proved experimentally by us. Further evaluation of Inula racemosa in patients of interstitial lung disease is needed to confirm its role in such type of ailments.

Poster : 19 AGE RELATED CHANGES IN URINARY CREATININE AND 5-HYDROXYINDOLE ACETIC ACID EXCRETION IN HEALTHY INDIANS

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Circadian variation of urinary creatinine and 5-hydroxyindole acetic acid (5-HIAA) was studied in 130 healthy volunteers (65; 66 women) of different age groups to find out the effect of age, if any, on the normal values and rhythms under tropical conditions. The volunteers were divided in four age groups (16-30 years; 31-45 years; 46-60 years; 61-75 years), each comprising of 20, 20, 15 and 10 men and women participants. All volunteers were synchronized for one week with diurnal activity from 0630 to 2200 and nocturnal rest; meals at 0830, 1330 and 2030 with usual fluid intake. They refrained from strenous activity like games or exercises on the dates of investigation. Urine was collected from each volunteer in given sterile containers, containing 5 ml of glacial acetic acid as a preservative, at 6 hr intervals at 0600 for the complete 24 hr period. Total volume of each 6 hr collection was noticed in creatinine excretion with acrophase at -248° for all men and -247° for all women subjects. Similarly, urinary 5HIAA

also exhibited significant rhythms in healthy Indians with regular amplitude and acrophases at -127°C for all participants, -122° for all men and at 132° for all women volunteers. A difference of nearly 8 hours in the crest of circadian rhythm between creatinine and 5-HIAA was observed.

Poster : 20 CIRCADIAN RHYTHM OF ENDOCRINE AND METABOLIC FUNCTIONS IN HEALTHY INDIANS

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Circadian variations of certain endocrine and metabolic functions were studied in 65 young healthy Indians (40 males, 25 females; age 20-25 years) in order to establish circadian rhythmic pattern and time qualified reference norms under tropical conditions. All participants were synchronized for a week with diurnal activity from 0600 to 2200 local time and nocturnal rest. All were taking their usual (although not identical) three times daily meals: breakfast at about 0830, lunch at 1300 and dinner around 2030 with usual fluid intake. Each subject was asked to continue his/her daily routine work, but did not undertake any strenuous activities. 20 ml blood samples were collected from each subject at 6 hr intervals at fixed time points for one complete 24 hr. span in plain and heparinized vials. Plasma 17-hydroxycorticosteroids (17-OHCS), 11-OHCS, AEC, Ca, P, Mg, Cr, UA were measured. Similarly, urine was collected for each volunteer at 6 hr. intervals beginning at 0600 for the complete 24 hr. span and urinary 17-Kgs, 17-KS, Ca, P, Mg, UA, OA and Cr were determined. A marked rhythm in all studied variables with significant amplitude was observed with changed peak hours (acrophase) in healthy Indians. There was no difference in blood profiles in healthy Indians in comparison to westerners of comparable age group. However, urinary parameters decreased markedly. The decreased excretion of studied urinary variables could probably be due to changed dietry conditions, societal responsibilities and temporal differences under tropical conditions.

Poster : 21 AN EVALUATION OF A HERBAL PREPARATION - DIABETINO ON NON-INSULIN DEPENDENT PATIENTS OF DIABETES MELLITUS

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Various plants and herbs have been mentioned in ancient Indian Medical Science (AIMS) to possess anti-diabetic activity. The experiments performed on these herbal drugs in animals on modern scientific parameters have also shown that these drugs possess hypoglycaemic action. It was, therefore, planned to investigate the effects of a combinations of such plant drugs - 'DIABETIND' on noninsulin dependent patients of diabetes mellitus. In the present study in thirty six patients, when DIABETINO was given for three months, it was found that the drug significantly reduced the level of hyperglycaemia after meals. It is, therefore, concluded that the preparation may be useful agent for the benefit of the patients of diabetes mellitus.

Poster : 22 BLOOD PRESSURE RECORDING IN NEONATES

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The objective of the present study is to record B.P. in neonates by one of the latest methods and to compare it on the basis of age and sex. The present study is comprised of 136 normal neonates which includes 70 boys and 66 girls. All these neonates were observed from day 1st to day 21st of their lives and BP was recorded on four different occasions during this follow up - at 1-3 days, 5-7 days, 8-14 days and 15-21 days of their age. We have recorded the B.P. of neonates by an electronic device, one of the latest methods, 'CRITICARE' patient monitor system. All the cases with positive family history of hypertension were excluded. During the follow up from day 1-3

to day 15-21, we observed that systolic B.P. significantly raised in both boys and girls, but the increase was more steep during the first 15 days of life in girls. We also found that the diastolic B.P. decreased during the follow up in both boys and girls.

Poster : 23 ANTI-DIABETIC ACTIVITY OF AN INDIAN MEDICINAL PLANT

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Streptozotocin (STZ, 70 mg/kg in citrate buffer, n=8) induced and vestibulo-cerebellar lesioned (Stereotaxically, n=8) Charles-Foster diabetic male rats (body wt. 125±5 gms) were taken as model for examination the hypoglycemic effect of a herbal formulation (leaf extract). Intraperitoneal injection (i.p.) of this herbal aqueous leaf extract attenuates the blood sugar level to the control value in a dose dependent way. This study reveals the anti-diabetic effect on an Indian medicinal plant.

Poster : 24 A STUDY ON SEDATIVE HYPNOTIC EFFECT OF NEEM SEED OIL

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Azadirachta indica or Neem (Fam. Meliacea), a large evergreen tree is found in most parts of India. Its use in microbial infections, skin disorders and dental disorders are known and isolated studies have also reported on its hypoglycemic and anti-ulcerogenic effects. However, very few reports about neuropsychopharmacological actions of neem are available. Therefore, present study was undertaken to investigate the sedative hypnotic effect of A. indica seed oil.

Albino rats of either sex were divided into two groups of ten rats each. Group I served as control in which sleep was induced by Pentobarbitone 30 mg/kg i.p. In group II, A. indica seed oil (5 ml/kg p.o.) was given, 30 min. prior to pentobarbitone. Potentiation of pentobarbitone induced sleeping time was used to assess the sedative hypnotic effect. Onset, recovery and duration of action were recorded in each group.

A. indica seed oil significantly potentiated the pentobarbitone induced sleeping time in rats. Sleep onset was reduced while duration of sleep was prolonged by neem seed oil.

Poster : 25 SEPARATION AND QUANTITATION OF 4-METHYL UMBELLIFERONE ITS SULFATE AND GLUCURONIDE CONJUGATE THROUGH THIN LAYER CHROMATOGRAPHY

SANJEEV RATNA
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4-methyl umbelliferone sulfate (4MUS) and 4-methyl umbelliferone glucuronide (4MUG) are formed after Administration of 4-methyl umbelliferone (4MU) in rats. Because of the competitive nature of sulfation and glucuronidation for common phenolic substrates, 4 MU is useful model compound for investigation of drug extraction and metabolite formation by parallel (competing) metabolic pathways. A direct thin layer chromatographic (TLC) assay was developed for the separation and determination of 4MU, 4MUS and 4MUG in plasma from insitu rat intestine - liver preparation. In addition a procedure was developed to extract and determine 4MU in plasma from insitu rat intestine-liver preparation. In addition a procedure was developed to extract and determine 4MU in whole blood perfusate. Perfusate plasma containing an internal standard (Umbelliferone) was precipitated with methanol (1:4v/v) and separated on TLC. Inter and Intraday precision studies (n=5 for each) for both the plasma and whole blood procedures demonstrated relative standard deviations of less than 10% at all concentration studied. The compounds were stable in either the plasma or blood extracts at room temperature. The procedure was successfully used to analyse the perfusate samples obtained from the single pass in situ perfusion of rat intestine-liver system

with either trace or high concentrations of 4MU. The intestine was responsible for the formation of 4MUG during steady state perfusion with 4MU.

F : 01 THE ASTHMOGENIC EFFECT OF EXERCISE STRESS IN NORMAL FIRST DEGREE RELATIVES OF ASTHMATIC SUBJECTS

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The prevalence of exercise-induced asthma (EIA) after six minutes of standard exercise test on treadmill ergometer was studied in thirty healthy first degree relations of asthmatic subjects (group II) and was compared with that in thirty healthy controls (group I). Pulmonary function tests (PFT) measuring FVC, FEV_1, $FEF_{25-75\%}$ and PEFR were performed on each subject prior of exercise, immediately following exercise period and serially at 5 minutes interval for 25 minutes thereafter.

Bronchial lability was noted in 10% and 30% of the subjects in groups I and II respectively. Of all the parameters measured, $FEF_{25-75\%}$ exhibited most striking changes when expressed as percentage of the baseline value.

F : 02 AN EXPERIMENTAL MODEL OF OCULO RESPIRATORY REFLEX

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The oculorespiratory reflex (ORR), which manifests as slowing of respiratory rate and/or respiratory rhythm changes due to pressure or manipulation of the eye, was first described by Aschner in 1908. Since then a little attention has been paid to it. Therefore, the present experimental study was planned to explore the different aspects of the ORR. The study was conducted on 20 albino rabbits using a square wave (sw) type of stimulus. The ORR could be elicited in 100% of animals. The medial rectus was observed to be most reflexogenic for ORR. The three different patterns of ORR were observed in this experimental study, which have not been reported in the available literature. The frequency and pattern of ORR was not affected by bilateral vagotomy, intravenous atropine or glycopyrrolate but could be abolished by retrobulbar block.

The results of present study suggest that ORR is a frequent and potentially dangerous occurrence during extraocular muscle traction. These significant results in the rabbit may suggest a similar phenomenon in human patients. Secondly, abolition of ORR with retrobulbar injection, suggests its use in all cases of extraocular muscle surgery even when being performed under general anaesthesia.

F : 03 EFFECT OF ACUTE EXERCISE ON VENTILATORY FUNCTIONS

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The objective of present study is to find out the effect of acute physical exercise on ventilatory functions. 25 male and 20 female students between the age group of 17-20 years were made to perform stopping test exercise for 5 minutes. All these subjects are healthy, non-smoker and sedentary in habit. Vital capacity (VC), forced expiratory volume (FEV_1) in first second and peak expiratory flow rate (PEFR) were recorded before and immediately after exercise. It was observed that in majority of these subjects there were slight increase in VC, FEV_1 and PEFR after exercise, but the increase is not statistically significant. In few subjects VC, FEV_1 and PEFR values decreases after exercise. It may be concluded that acute exercise of short duration of mild to moderate intensity does not affect ventilatory functions significantly in healthy subjects.

F : 04 PULMONARY FUNCTION TESTS IN CHILDREN BELONGING TO POLLUTED AREAS OF INDORE

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In the present study 70 children (case group) from polluted areas and 40 children (control group) from relatively less polluted area of Indore between 10-14 years of age were studied for pulmonary function tests in both sexes. Data for the concentration of pollutants of the areas studied was obtained from pollution office, Indore. Analysis of the variable (FVC, FEV_1, PEFR, FEF 25-75% and FEV_1/FVC) was done in all the cases. All the values were significantly lower in case group as compared to control. There was not much difference in the values of two case groups exposed to industrial or vehicle pollution. On overall interpretation of pulmonary function tests of all children, it was observed that in case group 11% have values within normal limits, 46%, 24% and 19% showed obstructive, restrictive and mixed blockage patterns respectively. In control group 13% had obstructive and 6% restrictive pattern and rest had values within normal limits. Incidence of allergic conjunctivitis and recurrent upper tract infarction was significantly higher in case group as compared to control.

F : 05 DIURNAL VARIATIONS IN PEAK EXPIRATORY FLOW RATE IN ADOLESCENTS

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Peak expiratory flow rate (PEFR) is a simple single breath method for assessing ventilatory capacity, as reported by Kennedy (1953). It is becoming a reliable and useful way of following clinical cases with obstructive diseases of lung (Swaminathan et al. 1993). But evaluation of observed readings requires knowledge of its range in normal subjects of same age, sex, body surface area (BSA) and body mass index (BMI). Therefore, we planned firstly to estimate PEFR in normal adolescents, keeping in view aforementioned parameters, using FERRARIS Pocket Flowmeter, made in U.K. secondly we wanted to find out as to whether PEFR exhibits diurnal variations, if any or not. This paper reports the findings of diurnal changes in normal healthy (96) adults, aging (17-22 years), belonging to both sexes, having BMI (18.5-<25) PEFR has been recorded thrice on three consecutive days in the morning (9:00 - 9:30 A.M.) and also similar way in the afternoon (2:00 - 2:30 P.M.) in early winter season (i.e. in August and September 1997) PEFR shows lower values in adult-females compared to age and BMI matched group of adolescent-males. There are also vivid sex differences in diurnal variations in PEFR (i.e. in male morning PEFR is greater than afternoon PEFR, in female morning PEFR less than afternoon PEFR. Statistical significance of these findings will be discussed.

F : 06 PULMONARY FUNCTION TESTS IN CHROMIUM FACTORY WORKERS

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Twenty eight chromium factory workers of North Delhi in an age group of 20-45 years were included for the present study (mean age 30.57±5.308). Pulmonary function tests (including flow volumes) were carried out on each of the worker using ELF (Electronic Lung Function, P K Morgan) machine. Demographic parameters consisted of chest circumference, height and weight were measured. Work place environment was assessed by qualifying the respirable particulate matter of workers with the help of personal sampler of Envirotech Pvt Ltd Delhi. The sampler was run for eight working hours at the rate of 2.5 liters/m^3. Workers were divided into two groups as smokers and non smokers. The lung functions comprised of FVC, FIVC, RF, TLC, RV/TLC, FRC, FEV1, FEV1%, FEF25, FEF50, FEF75, PEFR, PIFR, Raw, Kst, ta, 50% and ta 75% respectively.

Their pulmonary function results reflect a clear decrement in majority of parameters in smokers as with that

of the non-smokers. The respirable particulate concentration was found to be .. Out of twenty eight subjects the percent of smokers was 60%, further 61.11% smokers were below 30 years of age. The concentration of particulate matter inhaled by the workers seems to be more in the electroplating unit as compared with others (viz. machining, lathe-cutting, polishing and storage units). However, the impact of such environment along with smoking habits seems to be responsible for not only decrement of the lung function results, but indicating a combination of restrictive and obstructive pattern in them.

F : 07 STUDY ON PULMONARY FUNCTION CHANGES AMONG THE PERSONNEL EXPOSED TO ASBESTOS CEMENT DUST

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The aim of the present work was to find out the restrictive, obstructive and mixed changes, if any, among the personnel exposed to asbestos cement dust for 15-25 years and to compare the pulmonary functions of smokers and non-smokers among them. The study was done on 82 subjects in the age group of 32 to 55 years. A total of 30 subjects were taken as control group belonging to same age group and the same socio-economic status and not exposed to asbestos cement dust. The history of smoking was recorded in terms of duration and the number of Bidis/cigarettes smoked per day. PFT was recorded by MEDISPIROR (a portable Vitalograph). It was observed that out of 82 personnel 24 subjects had restrictive changes including 3 severe cases, whereas, 14 had obstructive changes including 3 severe cases and 15 showed mixed pattern. Remaining 29 subjects were found to be normal.

F : 08 STUDY OF BENEFICIAL EFFECT OF EXERCISE ON CARDIOVASCULAR PARAMETERS

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Exposure of individuals (healthy medical students) to controlled bicycle ergometric exercise for a prolonged time have been observe to benefit cardiovascular reserve. Study was carried out on 30 young medical students. They were subjected to 75 days (6 days in a week) exercise trials with help of controlled bicycle ergographic load. Heart rate, blood pressure, and ECG were evaluated after comparing pre and post exercise values everyday during the exercise trials. At the end of 75 day span significant reduction in exercise induced tachycardia was noticed alongwith controlled heart rate resert at a lower level at the end of 75th day as compare to first day values. Systolic blood pressure values observed significantly high after exercise in initial days also revealed progressive reduction for the same graded exercise in subsequent trials. Observations confirmed the earlier inferences that exercise improve cardiac efficiency.

F : 09 EFFECT OF EXERCISE BY ISCHAEMIC LIMBS ON BLOOD PRESSURE

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A new approach to treat hypertension exploiting physiological principle/changes induced by active limb exercises in ischaemic state is being reported. Procedure involved application of concomitant tourniquet in all the four limbs in human subjects to induce complete obstruction to blood flow as ascertained by disappearance of pulse in the respective limbs. These ischaemic limbs were simultaneously subjected to flexion and extension exercises for a short period. Post-exercise blood pressure values revealed dramatic and statistically significant fall as compared to control.

Stable hypotensive gain by such daily manoeuvring is being evaluated in subjects at different levels of blood

pressures, serving at different levels of blood pressures, serving as control value after chronic exposures in order to evaluate therapeutic use of such physiological manoeuvre in hypertensives.

F : 10 INFLUENCE OF WEIGHT AND BODY BUILD ON BLOOD PRESSURE IN CHILDREN OF URBAN POPULATION

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As over weight constitute the risk factor for development of hypertension in adult, present work is designed to find out the relation between body build and blood pressure in children. In present study, blood pressure was recorded in 631 school children of both sexes, of the age group 4-15 years. Blood pressure was recorded by using mercury sphygmomanometer. In children blood pressure, height an weight were measured and Quetelet Index, which is a measure of body build, was calculated.

It was observed that systolic blood pressure was increased with age and increase was more marked after 10 years of age. Diastolic blood pressure was increased slowly with age. Blood pressure was correlated with weight and Q index and significant correlation was observed above 6 years both in male and female children.

F : 11 CARDIOPULMONARY EFFICIENCY STATUS IN HEALTHY RESIDENTS OF NEPAL

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Variations in cardiopulmonary efficiency attributed to changes in physical and chemical factors of the environment have been well established. Since cardiopulmonary efficiency is one of the indicator of health, a preliminary study has been undertaken to determine cardiopulmonary efficiency and lipid profile status in normal healthy residents of Nepal and age matched non residents of Nepal, staying in Bharatpur, Chitwan Distt. (a district situated in Tarai region of Nepal), so as to evaluate the impact of environmental factors on their cardiopulmonary function.

The materials for the present study was drawn amongst the staff members and students of College of Medical Sciences, Nepal and were subjected to questionnaire followed by Clinical Examination of Respiratory and Cardiovascular system. The subjects were divided in two two groups, each consists of 30 Nepalese and 30 Non-Nepalese individuals of 18 to 20 year age groups. Cardiorespiratory parameters such as MVV, FeV_1, 40 mmHg Endurance test, Havard's Steps test, VC, Arterial Blood Pressure, Pulse, Respiratory rate, and lipid profile were estimated in all the subjects.

The present study did not demonstrated any difference in pulmonary function and lipid profile between study and control group but cardiac efficiency index and 40 mmHg Endurance were statistically reduced. Further the chest size of all the cases of the Nepali students and staff were more than Indian individuals. The BP, pulse rate, respiratory rate were lower in Nepali groups as compared to Indian group. The results obtained were correlated with environmental factors.

F : 12 DICROTIC NOTCH AND GENDER

S. HUSSAIN, EMMANUEL SUBASH
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Finger pulse was recorded in 140 males and 90 females, on students Physiograph from the proximal phalanx of the right index finger. Height, weight and chest measurements were also taken. The pulse tracing was analysed

for the presence or absence of dicrotic notch on catacrotic limb. Incidence of dicrotism is less in females, younger age groups and greater height groups. Weight and BM1 is not significantly related to dicrotism. Paper discusses the significance of dicrotic wave with ejection time, length of arteries and their branching pattern, in different sexes.

F : 13 CORRELATION OF MEDICAL EDUCATION

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Increased risk of cardiovascular disease (CVD) with higher serum cholesterol levels in middle aged persons has been clearly established; however, a potential link between serum lipids in young individuals and clinically evident CVD later in life, is lacking. In this study lipid profile of 144 medical students (97 M, 47 F), 18-25 yr. of age, has been evaluated and correlated with their BMI, dietary habits, personal history of smoking and/or alcoholism and family history of ischemic heart disease (IHD), hypertension (HT) and diabetes mellitus (DM).

Blood samples withdrawn after overnight fasting from all subjects were analysed for total cholesterol (TCH), HDL cholesterol (HDL), triglyceride (TG) low density lipoproteins (LDL) and very low density lipoproteins (VLDL). Mean VLDL and TG levels were significantly higher in males as compared to females ($p>0.0001$). VLDL and TG levels had a positive correlation with the height and BMI of male subjects, however, such a correlation was lacking in females. Dietary habit did not significantly alter the serum lipid profile in these subjects. Personal history of alcoholism and/or smoking also did not significantly affect the lipid profile. Mean serum VLDL and TG levels were found to be higher both in male as well as female subjects having a positive family history of IHD.

F : 14 EVALUATION OF SYSTOLIC TIME INTERVALS DURING THE VALSALVA MANOEUVRE

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Non-invasive, assessment of the response of left ventricular function to the stress of the valsalva manoeuvre (VM) was carried out by measurement of systolic time intervals (STI) in 30 young healthy male adults. STI were determined during resting phase, phase 2 and phase 4 of VM. Rate corrected left ventricular ejection time (LEVTI) was reduced in phase 2 ($p<0.001$) with no significant change in pre-ejection period (PEP), and PEP/LEVT ratio was increased significantly ($p<0.001$) as compared to control levels. In phase 4 LEVT I was appreciably prolonged ($p<0.001$) in each case. It is suggested that this non-invasive technique provides another method for evaluation of left ventricular function in various autonomic and myocardial disorders.

F : 15 FLUCTUATION IN ORTHOSTATIC CARDIOVASCULAR DATA, ITS INTERPRETATION AND RELATION WITH ENDURANCE STATUS

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Tilt Table data of 33 endurance trained and 24 untrained subjects were examined to evaluate whether high aerobic fitness is associated with a less stable orthostatic cardiovascular data (which has occasionally been described as an indication of orthostatic intolerance). Average deviation, variance, standard deviation and coefficient of variation of all the observations made at 2 min interval during the 20 minute period of tilt were computed, individually. These variables as such, were taken as measures of stability in the orthostatic data and processed further. Support for such type of analysis exists in the literature. Orthostatic index (OI), maximal, average and range of inter-observation differences were also analysed as determinants of stability. To facilitate, such an analysis, difference between two successive observations (i.e. 0-2 min, 2-4 min... 18-20 min during tilt) were computed. Endurance group exhibited

a significantly superior aerobic status compared to untrained as was evident from Physical Fitness Index (PFI) values (129±21 vs 103±12, respectively, expressed as Mean±SD; $p<0.01$). Resting supine and orthostatic heart rate was significantly lower in the endurance trained. However, all the parameters selected to quantify stability in the orthostatic data were comparable in the two groups. Correlation between any of these parameters and PFI was poor. Fluctuations in 3 fainters (excluded from the analysis) and in those with exceptionally high values of PFI were also not different from the untrained. However, inter-observation difference in heart rate was significantly higher ($p<0.05$) during simple standing which was performed in 18 subjects in the endurance trained group. Results indicate that orthostatic fluctuations in heart rate are possibly related to muscular activity in the lower limbs/trunk and endurance training does not add to orthostatic instability.

F : 16 COMPENSATORY MECHANISMS INVOLVED IN CARDIOVASCULAR REGULATION DURING ACUTE HAEMODILUTION

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Acute haemodilution produces corresponding reduction in concentration of circulating erythrocytes and a fall in whole blood viscosity. On induction of normovolaemic haemodilution in experimental animals, the partial pressure of oxygen (PO_2) of arterial blood may be normal but oxygen (O_2) content of blood is reduced in proportion to the reduction in haematocrit. Fall in arterial O_2 content as a result of haemodilution requires haemodynamic compensation to maintain O_2 delivery to tissues and blood metabolic homeostasis. The most evident compensatory mechanisms operative to meet the O_2 demand in such conditions are an increase in cardiac output (CO), peripheral vasoconstriction to divert blood supply to essential organs and redistribution of blood flow. The increase in CO may be due to an increase in heart rate or by an increase in stroke-volume or both. The heart rate response which is reflexogenic in nature has been reported to be very variable in between the species as well as within the species.

In the present study the cardiovascular effects of normovolaemic haemodilution were compared between anaesthetized dogs and cats. Experiments were performed in anaesthetized artificially ventilated animals. Femoral artery was cannulated to record arterial pressure with a pressure transducer and to bleed the animal and for injections femoral vein was cannulated. CO was recorded by thermodilution technique using cardiac output computer. In dogs with basal heart rate below 100 beats/min, the increase in CO was entirely due to an increase in the heart rate. Beta blockade by injecting 1 mg/kg propranolol did not alter the response pattern. However, after administration of atropine or bilateral vagotomy or bilateral vagotomy plus beta blockade, the heart rate response was abolished and in such conditions increase in CO on haemodilution was due to an increase in the stroke--volume. On the other hand in anaesthetized cats with relatively higher basal heart rate the increase in CO was primarily due to an increase in stroke-volume with small increase in heart rate. The difference in the responses of cats and dogs can be attributed to low resting vagal tone in anaesthetized cats because in anaesthetized dogs the increase in heart rate was solely due to withdrawal of vagal tone without any significant contribution from sympathetic efferents.

F : 17 EFFECT OF AMLODIPINE ON CARDIORESPIRATORY PROFILE IN HYPERTENSIVES

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Amlodipine is a new dihydropyridine calcium channel blocking agent. In this study, cardiorespiratory parameters of amlodipine were studied in about 20 mild to moderate hypertensive patients of both sexes. Patients of secondary hypertension, chronic obstructive pulmonary disease, smokers and alcoholics were excluded from the study. After a 2 week of placebo washout period amlodipine therapy was started. Cardio parameters included the measurement of heart rate (HR), systolic and diastolic blood pressure (BP) and exercise test performed on Masters Step Stool. For respiratory parameters autospiror H1493 was used to record FVC, %FVC, FEV_1, PF and P_{75}. All the parameters were taken after placebo washout period and then at the end of 6 weeks of therapy with amlodipine. Hypertensives

treated with amlodipine showed a significant decline in both S.B.P. and D.B.P. without any reflex tachycardia. Besides this amlodipine treatment resulted in significant decrease of response of H.R., S.B.P. and D.B.P. after exercise. For respiratory parameters, though amlodipine treatment improved all the parameters but it was not statistically significant. Suggesting that amlodipine beside being effective hypertensive does not have adverse effects on respiratory parameters unlike other antihypertensive agents.

F : 18 VARIATION OF STRESS RESPONSE IN TRIBALS AND NON-TRIBALS

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Introduction : Mental stress is known to cause rise in blood sugar and blood cholesterol levels. Out of different types of stresses, the fear of *inevitable surgery* also causes sufficient mental stress to precipitate a rise in blood sugar and cholesterol levels. We wanted to know whether there is some difference in the stress response in different ethnic groups e.g. Tribals and Non-tribals.

Material and Methods: 50 tribal and 48 non-tribal patients of age group of 41 to 50 years, admitted at Rajendra Medical College Ranchi, for different operations, were the subjects of the present study. Blood sugar and cholesterol levels were evaluated at the time of admission and just before operations, as pre-stress and stress values.

Observation: The effect of stress of *inevitable* surgery was found to be more profound and statistically significant in non-tribals.

Conclusion: Possibly the natural and playful life of Tribals make them more adaptable to the stresses.

F : 19 EFFECT OF SHAVASAN ON EEG PATTERNS IN YOUNG, HEALTHY INDIVIDUALS

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The effect of Shavasan, a relaxation technique was observed on the EEG patterns of 42 young medical students. Their initial EEG pattern was recorded on an eight channel EEG machine using 10-20 system of scalp electrode placement. The alpha appearance time and the alpha index were calculated.

The subjects then performed Shavasan daily for 30 minutes for a period of twelve weeks. The EEG patterns were then recorded again. It was found that there was a significant fall in alpha appearance time and a significant rise in alpha index after 12 weeks of Shavasan practise.

It can be concluded that Sahvasan relaxes the mind and helps co-ordination and synchrony of the cerebral cortical activity resulting in reduced time for alpha waves to appear and better alpha index in EEG.

F : 20 ADVANTAGES OF YOG SADHANA

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Amongst many types of yoga training, one important one, is Swanand Sahayog Sadhana (SSS). This sadhana comprises of six different procedures each having its own advantages. The procedures include -

(1) Shavasana Meditation
(2) Chanting of Om
(3) Pranayam

(4) Prayer
(5) Yog Mudra
(6) Surrendering position

The advantages of these procedures are documented by the participants themselves. The advantages in short are temperamental, mental, therapeutic and psychological. The SSS results in health, mental peace, freedom from stresses and social stability. It is recommended that, everyone should practise SSS to achieve these advantages, as the procedures of SSS are simple to practise.

F : 21 EFFECTS OF EXERCISE STRESS ON THE ECG OF THE CONGENITALLY DEAF SCHOOL CHILDREN: RELATIONSHIP WITH JERVELL - LANGE NEILSEN SYNDROME (THE LONG QT SYNDROME)

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The present study was conducted to test the effects of exercise stress on the ECG of the congenitally deaf children from school for deaf, in the view of the occurrence of the Jervell-Lange Neilsen variant of the Long QT Syndrome in them. An EC in Lead II was recorded at rest and after two minutes of static jogging. For comparison, the same manoeuvre was repeated in normal healthy children from an other school. ECG were analysed for the calculation of corrected QT interval (QT_c) by Bazett's equation $QT_c = QT /(R—R)^{1/2}$ and also for the evidence for other abnormalities. The resting QT_c in normal male (n=15) and female children (n=10) was 377±9 and 373±6 msec respectively. On exercise the values were 368±15 in males and 374±6 msec in females. These changes in QT_c on exercise were, however, statistically insignificant ($p>0.05$). In congenitally deaf male (n=50) and female children (n=27) the QT_c at rest was 405±13 and 405±7 msec respectively. Following exercise the QT_c values were 398±11 in males and 413±13 in females, but these changes were statistically insignificant ($p>0.05$) when compared with resting state. However, QT_c in female deaf children was significantly longer both at rest ($p<0.01$) and following exercise ($p<0.01$) as compared to normal female children.

Healthy children did not show appreciable EEG abnormality either at rest or on exercise. On the contrary many of their counter part (deaf) exhibited occasional ECG abnormality at rest but plethora of abnormalities after exercise viz., sinus arrhythmias, sinus pauses, ST depression, T-inversion, biphasic-T, notched-T, T-alternans, atrial ectopics and junctional rhythm.

These results lend credence to the hypothesis of sympathetic imbalance and repolarisation defects in deaf children's heart, which in more severe form could pass into frank Jervell - Lange Neilsen variant of The Long QT Syndrome.

F : 22 EFFECT OF PARITY AND OPERATIVE STRESS OF MOTHER ON HAEMOGLOBIN AND ELECTROLYTE VALUES (SODIUM & POTASSIUM) OF NEONATES

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Various workers have reported changes in electrolytes in different tissues after exposure to stress. By using heat, cold and haemorrhage, they have shown that behaviour of sodium and potassium in the tissues is similar, irrespective of the type of stress. The effect of operative stress and parity of mother on neonates have been studied less.

In this work an attempt has been made to examine the pattern of electrolyte change in neonates after exposure of mother to operative stress. It was thought profitable to assess haemoglobin also, if there was any change.

When the neonates were sorted out according to the obstetrical history of mode of delivery at birth like normal delivery and instrumental delivery, it showed higher potassium content in plasma (5.4±0.34 meq/L) in neonates born with obstetrical interference than those neonates born by normal delivery (4.7±0.36 meq/L).

The effect of parity was studied by comparison of two groups of foetuses born from multipara and primipara. There was no significant difference of any of the values of haemoglobin, sodium and potassium in the two groups studied.

F : 23 CHANGES IN AUTONOMIC PARAMETERS FOLLOWING HEAD STAND

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The stimulating effects of the head stand (sirsasan) are described in the ancient yoga texts. The present study was conducted to assess the autonomic changes following the head stand. Thirty healthy male volunteers (age range 19 to 33 years) were divided into two groups (A,B) of 30 subjects each. Group A performed the head stand without wall support, whereas group B performed the head stand with wall support, in both cases for 2 minutes. The autonomic parameters viz. galvanic skin conductance (GSC), heart rate (HR), respiratory rate (RR) and digit pulse volume were recorded 5 minutes immediately after the head stand, while sitting. The data were analyzed using paired 't' test. Group B showed a significant increase in GSC (i.e., increased sudomotor sympathetic tone; $p<0.05$) along with a significant reduction of HR ($p<0.02$). Group A showed a significant reduction in HR ($p<0.05$). No other parameter changed in either group. The results suggest that the head stand (sirsasan) reduces cardiosympathetic discharge to the sinoatrial node, while sympathetic sudomotor tone increased. Hence a clear stimulating effect of the head stand was not found.

F : 24 SYMPATHETIC ACTIVATION AS A CONSEQUENCE OF HIGH FREQUENCY YOGA BREATHING

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Thirty one normal healthy male volunteers with ages ranging from 22-33 years (mean±SD 25.9±3.8), were assessed polygraphically to study the autonomic and respiratory variables in kapalabhati (high frequency yogic breathing) and in conventional hyperventilation as a control session. Recordings were made in all subjects for 5 minutes before and after both kapalabhati and hyperventilation practices with 1 minute of kapalabhati (respiratory rate approximately 120/min) and hyperventilation (respiratory rate approximately 30/min.). Statistical analysis was done using two factor ANOVA, Tukey test. The respiratory rate showed a significant decrease following kapalabhati and hyperventilation (13.2% and 13.6%) respectively. The galvanic skin conductance showed a significant increase in kapalabhati (18.9%) alone and a reduction in hyperventilation (8.9%). The heart rate did not showed any change in either of the practices. It is described in the ancient yoga texts that the practice of kapalabhati has a stimulating effect on the body which in terms of autonomic status can be interpreted as sympathetic arousal as shown by increase in galvanic skin conductance whereas hyperventilation did not show this effect though both kapalabhati and hyperventilation have reduced digit pulse volume and breath rates.

F : 25 DIFFERENCES BETWEEN CONGENITALLY BLIND AND NORMAL SIGHTED SUBJECTS IN THE P1 COMPONENT OF MIDDLE LATENCY AUDITORY EVOKED POTENTIALS

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Auditory evoked potentials (0 to 100 msec. range) were recorded in nine congenitally blind children (age = 14.1±1.4 years) and an equal number of age-matched children with normal vision. There were two repetitions per subject. The blind children had peripheral deficits with an absence of visual evoked responses. The peak latency and amplitude of the P1 wave of the two groups were compared. The peak latency was significantly lower in the congenitally blind, compared to the normal sighted (two factor ANOVA, $p<0.05$), i.e., 59.85 msec versus 66.48 msec, respectively. Since the P1 wave is thought to correspond to either the ascending reticular activating system or to the primary auditory cortex, these results suggest that information processing at these neural levels occurs more efficiently in the blind reflecting plasticity of the non deprived sensory pathways.

F : 26 CORRELATION OF LIPID PROFILE AND ANTHROPOMETRIC PROFILE OF CORONARY RISK SUBJECTS FOLLOWING YOGIC LIFESTYLE.

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There are many risk factors of coronary artery disease. Hyperlipidemia specially hypertriglyceridemia could be important in this aspect. The distribution of fat in the form of truncal obesity is seen in the Indian population. We studied the effect of yogic lifestyle in 30 adults with risk factors for coronary artery disease, to see the correlation of the anthropometric profile with the lipid profile. The subjects underwent an integrated course of yoga training for two days a week for two weeks. Anthropometric data like body weight, body mass index, waist-hip ratio and blood for estimation of cholesterol, HDL, cholesterol-HDL ratio, LDL and triglycerides was taken before and at 4,10,14 weeks of yoga practice. A significant reduction in cholesterol, LDL and triglycerides was found. There was a positive correlation between the waist-hip ratio and triglyceride level which was not seen after yoga training. A significant correlation was also observed between the waist-hip ratio and cholesterol-HDL ratio. Hence a reduction in cholesterol, triglycerides, or an increase in the HDL levels could be one mechanism to explain the beneficial effects of yoga practice.

F : 27 STUDY OF VISUAL AND AUDITORY REACTION TIME IN HEARING AND VISUALLY IMPAIRED SUBJECTS

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Study was undertaken to evaluate the effect of visual impairment on auditory reaction time and auditory impairment of visual reaction time. Reaction time to visual and auditory stimuli recorded in kymography amongst the students of Govt. Deaf and Mute School and Govt. Blind School of Takyelpate, Manipur, respectively were studied. Mean values of visual and auditory reaction time were found to be 326 and 184 milli seconds respectively.

Out of 70 blind students, light increase in auditory reaction time was detected in 45 students who were blind since birth than the remaining 25 students who acquired the condition after birth. There was significant increase in auditory reaction time among 16 blind students whose intelligence were considered to be below normal. A slight increase in auditory reaction time was also observed among 13 blind students having familial history of blindness.

Out of 56 deaf and mute students, there was slight increase in visual reaction time among 2 students who developed deafness after birth than among 54 students who had the condition since birth. There was significant

increase in visual reaction time in 13 students whose intelligence was regarded to be below normal. Marginal increase in visual reaction time was detected among 7 deaf and mute students who had familial history of the same condition.

F : 28 SKELETAL MUSCLE ENDURANCE IN CHRONICALLY UNDERNOURISHED HUMAN SUBJECTS

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We have earlier demonstrated a reduction in Skeletal muscle strength in chronically undernourished subjects, when strength was corrected for variations in anthropometry. This study extends those findings to the investigation of skeletal muscle endurance. 45 adult (18-30 yrs) males, divided into two groups (Well nourished, n=25; Chronically Undernourished n =20) were studied. Skeletal muscle endurance for both isometric and isotonic exercise was studied using hand held dynamometer coupled with a load cell and linked to a polygraph. Endurance time taken for Muscle contraction to decrease to 50% of Maximal voluntary contraction and rate of decline of strength were used as indices of endurance. Endurance time was reduced in Undernourished subjects for isotonic exercise. Rate of decline of strength was unaltered. The data suggests that using conventional indices, undernourished subjects show greater fatiguability in skeletal muscle.

F: 29 CONTINGENT NEGATIVE VARIATION RESPONSE TO INCREASING STRENGTH OF ELECTRIC IMPERATIVE STIMULUS

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The present study was carried out on male, healthy volunteers during Contingent Negative Variation (CNV) paradigm in a simple reaction time task with a constant Interstimulus Interval (ISI) of 2 secs. CNV response was recorded using Neuropack-8 from five scalp sites. A ring electrode was placed on the left central finger. Threshold for pain (Io) was determined by ascending incremental method. From Io four intensities of electric current were calculated and subsequently used as imperative stimulus. CNV experiment consisted of a warning stimulus (cl ick-S1) followed by the imperative stimulus in the from of electric shocks (S2) to the left central finger. S2 could be terminated by the subject quickly by pressing a response button with the dominant hand. CNV response was recorded in response to different intensities of imperative stimulus. N2P3 amplitude, N2P3 area, E latency, E area and total area showed an increase with increasing strength of stimuli. P3 latency, O latency and response time showed a decrease with increasing strength of stimuli. Values of some of the components to I1, I2, I3, & I4 intensities of S2 are as follows: P3 latency - 330±1.2, 343.7±28.8, 341±42.2 & 339±35.5 msecs; O latency - 918±90.8, 1037±169.8, 846±235.3 and 827±273.03 msecs; Response time - 375.6±124.4, 219.2±30.8, 207±33.9 and 202.8±24.02 msecs; E latency - 1673±173.9, 1604±66.8, 1657±190.9 and 1714±219.07 msecs; Total area - 10.3±3.09, 8.3±1.9, 10.1±3.4 and 11.1±4.9 mV2. It can be concluded that various components of CNV correlate well with intensity of electric imperative stimulus.

F : 30 MODULATION OF LEARNING AND NOCICEPTIVE BEHAVIOUR BY CHOLINERGIC AND NMDA RECEPTORS

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Central cholinergic and NMDA receptors have been implicated in the modulation of various CNS functions including learning behaviour and nociception. Their interaction however, has not been studied extensively. The present study is an attempt to evaluate this interaction by manipulation of receptors, in Wistar rats, on conditioned

avoidance response (CAR), as a measure of learning behaviour, using the Basic Operant Test System (Coulbourne) and the tail flick latency (TFL), using the Ephaptex algisiometer, as a measure a nociception. Four test groups of rats, with 3 subdivisions each, were treated i.p. with various combinations of agonists and antagonists, acting on cholinergic and NMDA receptors. The control group was treated with saline i.p. following the treatment the animals were tested for CAR (20 trials) in the behaviour cage. The TFL was performed prior to this testing and then immediately and 15 minutes after. The observations were repeated over 3 consecutive days. Statistical analysis of the data, using the Anova test, of the 5 subgroups tested so far, has shown a significant change in the latency and frequency of the lever pressing in the behaviour cage indicating an interaction between the cholinergic and NMDA receptors in the learning behaviour. However, the changes in the TFL are not significant except immediately after the cage testing, has to be further investigated.

F : 31 NOCICEPTIVE BEHAVIOURAL RESPONSE IN RATS EXPOSED TO MAGNETIC FIELD: ROLE OF OPIOIDS

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Recent literature is suggestive of the opioid interaction between the magnetic fields and the biological systems on the basis of studies conducted mostly in invertebrates (land snail, Cepaea nemoralis). These studies have involved phasic pain test (thermal noxious stimulation). The present study was aimed at exploring the role of opioids in the bioeffects induced by magnetic fields in rats using tonic pain model (formalin pain). Formalin pain model is akin to moderately prolonged pain in humans. Postpubertal male rats (n=24) were randomly divided into four groups (n=6 each). Rats (groups 2 and 4) were exposed to magnetic field (1.79 μT) for 28 days, 2 hours a day, after receiving 0.9% saline and naloxone sc (3 mg/kg body wt.). Groups 1 and 3 were not exposed to magnetic field but were treated similar to groups 2 and 4, respectively. As compared to the saline treated non-magnetic field exposed group (average pain rating 2.03 ± 0.01), the pain rating during the 60 minute session was significantly reduced ($p \leq 0.01$) in the saline treated exposed group of rats (1.28 ± 0.08) but not in the naloxone treated exposed group of rats (2.18 ± 0.05). The results suggest that the analgesia produced by exposure to magnetic field is mediated by opioids.

F : 32 PULMONARY RESPONSES DURING COLD INDUCED ACUTE PAIN

MINATI SAHU, RAMA RAMAN MOHANTY
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Many automatic responses are observed during cold induced acute pain. Most common among these are seen in cardiovascular system, pupilary size etc. However, change in pulmonary function in cold induced acute pain has not been studied in great detail. Keeping in view of the fact the present study has been undertaken.

Acute pain was induced in 25 non smoker male volunteer in the age group of 17-21 by immersing hand in ice cold water and their respiratory rate, tidal volume, reserve volumes and capacities, vital capacity, and peak rate were measured.

In our present study it indicates that alternations in pulmonary profile from a part of multidimensional responses observed during cold induced acute pain.

F : 33 EFFECT OF ADENOSINE A1 RECEPTOR AGONIST IN STATUS EPILEPTICUS IN RATS

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Status epilepticus (SE) is a neurological emergency, pathophysiology being variable and poorly understood. If not controlled, SE can lead to permanent neuronal damage. Loss of aenosinergic mechanism has been recently

implicated in status epilepticus. We have earlier demonstrated that the adenosinergic system exhibits anticonvulsant activity against pentylenetetrazole-induced seizures, in rats. This effect is mediated by adenosine A1 receptors and is independent of its peripheral effects. In the present study, the effects of an adenosine A1 receptor agonist, N^6-cyclopentyladenosine (CPA) was studied in the lithium - pilocarpine model of SE and compared with diazepam.

Male 'Wistar' rats, weighing 150-200 g, were pretreated with lithium chloride 127 mg/kg, intraperitoneally. Four hours later pilocarpine nitrate 30 mg/kg was administered subcutaneously. Pilocarpine produced cholinergic symptoms e.g. salivation, urination, defecation, lacrimation, which were followed by recurrent and persistent forelimb clonus with rearing. The mean latency of clonus was 19±1.41 min. CPA in doses of 5 and 10 mg/kg and diazepam 4 and 8 mg/kg i.p. when given 20 min. after onset of clonus, terminated the seizure activity within 5 min, in all rats. The effect was dose-dependent. When CPA or diazepam were administered 10 min before pilocarpine in lithium primed rats, both protected the seizure development after pilocarpine. Interestingly, pretreatment with CPA but not diazepam, also, partially reversed the associated cholinergic symptoms that are observed after pilocarpine.

A modulation of cholinergic activity by adenosinergic stimulation has been documented previously. The present findings support involvement of adenosinergic system in status epilepticus and indicate that increasing adenosinergic transmission in the central nervous system attenuates, via A1 receptor activation, the enhanced cholinergic activity after pilocarpine in lithium primed rats.

F: 34 STATUS EPILEPTICUS BY PILOCARPINE IN LITHIUM PRIMED RATS: DOES TREATMENT SCHEDULE AFFECT SEIZURES AND NEURONAL DEGENERATION

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Convulsive status epilepticus (SE) is a neurological emergency associated with a mortality rate of 10 to 12% and an even greater morbidity. Currently used drugs often fail to control these seizures. To study newer therapeutic options, a good animal model of SE is required. The seizures produced by the combination of lithium (Li) and pilocarpine are reproducible, consistent in time of onset, recurrent, prolonged and, associated with high mortality. In literature, the described pretreatment time for lithium varies from 20-24 hours. Li has a quick tmax after i.p. administration. In absence of any kinetic correlate such long pretreatment time seems empirical. Therefore, in the present study, the effect of LiCl, i.p. administered at different pretreatment times 4, 12, 16, 20, 24, 48 and 72 hrs, before pilocarpine was evaluated, in male albino rats. Per se effect of lithium chloride and pilocarpine, in the doses used, was studied in control groups. After pilocarpine administration (30 mg/kg s.c.) all the animals that had received LiCl, upto 24 hr prior, consistently showed convulsions without any significant difference in severity, latency and mortality. On the other hand, rats who received LiCl earlier than 24 hr did not convulse. The latencies were 21.66±1.4, 13.5±3.8, 19.99±1.41, 16.83±2.0, 13.97±1.0 min at 4, 8, 16, 20, 24 hrs respectively. However, all the animals, irrespective of pretreatment time showed cholinergic symptoms e.g. defecation, urination, salivation and behavioural signs e.g. grooming, scratching and licking. In all the groups (<24 hrs pretreatment with LiCl) diazepam 8 mg/kg terminated seizures activity within 5 min. The brains were perfusion-fixed with phosphate-buffered 4% paraldehyde and the extent of neuronal damage assessed histologically.

The experiments provide evidence that LiCl pretreatment can be given at any time between 4 hr to 24 hr. Depending on the objective of the experiment, the shorter pretreatment time would of course be more convenient. The study also suggests a potential for drug interaction in patients on lithium therapy requiring cholinomimetic agents.

F : 35 ROLE OF EEG IN CLINICAL PRACTICE

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Electroencephalogram (EEG) is a record of electrical activity of the brain. Besides being non-invasive and safe, it is very useful in diagnosis and management of various neurological disorders. It has been found to be of particular importance in the following conditions.

(1) To diagnose Epilepsy and define its type especially SSPE and Herpes.
(2) To differentiate pseudo seizures from seizures
(3) To diagnose metabolic encephalopathies and anoxic states
(4) To define various sleep disorders.
(5) To certify brain death.

The author will briefly, elucidate role of EEG in each of above situation.

F : 36 SUBICULAR LESIONS INDUCED IMPAIRMENT OF OPERANT BEHAVIOUR AND ALTERED MORPHOLOGY OF CA1, NEURONS OF THE HIPPOCAMPUS

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The effects of bilateral subicular electrolytic lesions were examined for the operant behaviour for food reward on a continuous reinforcement schedule as well as the dendritic morphology of CA1 hippocampal areas. The subjects were female Wistar rats of 60 days old and were divided into four groups, (n=6 each group) one serving as age matched untrained control, a second group received training and sham lesioning, a third group were only trained and the fourth group were first trained and then subjected to subicular lesions. The rats were food deprived twenty four hours prior to operant behaviour training sessions. Two training sessions for operant behaviour with continuous reinforcement of ten minute duration per day were employed during the shaping session, following which rats were allowed ten minutes of operant food reward for ten days. On the eleventh day, subicular lesions and sham surgery in the respective groups was done. After seventy two hours of surgical recovery operant behavioural testing was performed daily as before for a further period of ten days. Later all the groups of rats were sacrificed and the hippocampus was processed for rapid Golgi staining. Our results suggest that subicular lesions produce a significant permanent reduction in lever press rate. Further the Golgi studies revealed a reduction in dendritic branching points and intersections of apical and basal CA1 neurons in lesioned rats.

F : 37 EFFECT OF 2DG CONTINUOUS ADMINISTRATION IN VMN OF HYPOTHALAMUS ON PHASIC PAIN BEFORE AND AFTER SUCROSE FEEDING

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Long term sucrose feeding (32%) for 3 weeks ad libitum has been reported to lead to hyperalgesia and short term sucrose feeding for 6-48 hours leads to analgesia as reflected by the tail-flick test. The suggested mechanism is probably mediated by the release of B endorphins by the sweet taste. The present study was designed to explore the effect of continuous administration of 2-Deoxy D glucose (an antimetabolite of glucose) in the VMN after sucrose feeding to the rat. 2Dg was infused (1 μL) directly into the VMN through osmotic pumps (Alzet) subcutaneously implanted at the back. Phasic pain response was tested by recording the latencies of hind paw licking, tail-flicking and the thresholds of tail-flich (TF) simple vocalization (SV) and vocalization after discharge (VA) at 0,6,12 and 48 hours before and after feeding the rats with 20% sucrose solution ad libitum. The values for tail flick latency after infusion of 2DG were not statistically significant as compared to the controls. Similarly the thresholds for TF and SV increased statistically ($p<0.01$) at 12 hours. (0.05 ± 0.02 to 0.12 ± 0.06 mA and 0.09 ± -0.05 to 0.23 ± 0.19 mA) respectively.

After ingestion of approximately equal quantities of sucrose threshold for TF, VA were not affected whereas for SV it was decreased. The latency of tail-flick was decreased after 6 and 12 hours of sucrose ingestion ($p<0.001$). Whereas when the rats ingested sucrose in the absence of 2DG, there was a decrease in SV and VA ($p<0.001$) as compared to the controls. The results suggests that the sucrose ingestion induced changes in SV and VA are mediated by the hypothalamic glucoreceptor neurons in the VMN.

F : 38 CEREBROSPINAL FLUID DYNAMICS OF DOGS DURING RAISED INTRACRANIAL PRESSURE

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Raised intracranial pressure (ICP) is one of the commonest cause of mortality in neurosurgical patients. The viscoelastic properties of craniospinal tissues are responsible for the cerebrospinal fluid dynamics. The pressure volume relationship (ICPVR) of CSF has been employed to assess the elastic characteristics of craniospinal compliance of adult dogs. In the anaesthetised dogs, ventricular pressure (VP) and epidural pressure (EP) were recorded for 30" by cannulating the lateral ventricle (LV) and by introduction of rubber balloon in epidural space. Ringer solution was infused at three rates (0.042, 0.056 and 0.084 ml/sec) into the LV under basal VP. The VP and EP changes were monitored during and after infusion. The effect of raised ICP (VP 110 mmHg) on the ICPVR were also studied, following LV infusion at various rates. The pattern of ICPVR at slow and faster infusion rates were identical except the peak pressure time (PPT) was significantly reduced on faster infusion. During raised ICP the pattern of ICPVR for VP was unaltered but the magnitude of the peak pressure was diminished at all flow rates, while the peak of EP was significantly lower only at slow rates of infusion. Thus our results indicate that the cranial tissue shows stress relaxation during faster infusion rates, and this effect is lost during continuous stress of raised ICP.

F : 39 ACCUMULATION OF OXIDIZED PROTEINS IN AGEING BRAIN IS PREVENTED BY THE GLYCATION ENDPRODUCT INHIBITOR DRUG AMINOGUANIDINE

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Structural and functional modifications of proteins as a result of oxidation mediated by oxygen free radicals occur in normal ageing and are also accelerated by diabetes. During ageing oxidized proteins may accumulate in the brain as the central nervous systems is a potential place where oxidative reactions catalyzed by reactive oxygen species occur. As a result oxidized protein levels may be several-fold higher in aged animals than those in the younger animals. Information on regional effects of ageing on levels of oxidized proteins in the brain is, however, extremely limited.

We measured levels of the oxidized proteins in the hippocampus of rats aged 3,12,18 and 24 months. The data showed a significant progressive increase in the levels of oxidized proteins with age (ANOVA : $p<0.01$). Our results further showed that the aminoguanidine administration to rats (intraperitoneally injected, dose 25 mg/kg, for 1, 2 and 3 months) in 24-month-old rats resulted in a significant decline in the levels of oxidized proteins in the hippocampus (ANOVA $p<0.01$). The drug also concomitantly decreased the levels of monoamine oxidase in the hippocampus. Based on the available reports in the literature on the drug's effects on amine oxidases it would appear that the drug's ability to lower the levels of oxidized proteins is mediated by its effects on monoamine oxidases.

In conclusion this study provides evidence for the accumulation of oxidised proteins in hippocampus during ageing. The results further show that oxidative damage to proteins can be prevented by the drug aminoguanidine, which has a potential clinical role in the further treatment of chronic diabetic complications as well as in preventing changes associated with normal ageing.

F : 40 EFFECT OF AMYGDALAR TISSUE TRANSPLANT ON THE RECOVERY OF EMOTIONAL NOCICEPTIVE RESPONSE

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Amygdala plays a very important role in the mediation of emotionality and fear related process. Bilateral amygdalectomy increases the threshold for vocalization, a measure of emotional nociceptive reactivity, without any change in the tail flick latency. Amygdalar tissue transplantation at the lesioned site did not recover the acquisition of radial water maze task, although the transplanted tissue was found to be well integrated with the host. The present work was designed to study the recovery of emotional nociceptive behaviour following amygdalar tissue transplant in the lesioned rats. In a group of adult wistar rats bilateral electrolytic (2mA for 8sec) lesions of the central nucleus of amigdala (CeA) were produced and in a separate group of rats amygdalar tissue was transplanted at the lesioned site after 2 days of lesion. The simple vocalization test, which was used to study the emotional nociceptive reactivity, was done both before and after 5 days of lesion and lesion-transplantation. After bilateral CeA lesions the threshold for simple vocalization (SV) increased from 0.44 ± 0.4 mA to 1.44 ± 0.7 mA ($p<0.001$) and 5 rats out of 9 did not vocalize till the cut off current strength of 2mA. Following amygdalar tissue transplantation, although the threshold for SV increased from 0.29 ± 0.2 mA to 0.63 ± 0.39 mA, but there was a significant decrease ($p<0.05$) when compared to the lesioned group and only one rat did not vocalize till the cut off strength. The results indicate a partial recovery of the vocalization response following amygdalar tissue transplantation. This recovery may be due to the release of neurotrophic factors or due to the formation of synaptic connections.

F : 41 EFFECT OF LESION OF BASOLATERAL AMYGDALA ON THE TASTE PREFERENCE IN RATS

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A study of gustatory preference was carried out in wistar strain albino rats by electrolytically lesioning the basolateral nucleus of Amygdala (BLA) (bilateral). The intake of sweet tasting Saccharin (Sn-0.1%, Soln. w/v), NaCl solutions (1% Soln. w/v) and tap water, were provided in single bottle, 2 bottle choice and 3 bottle choice situations. The consumption of fluids both before and after the surgical procedure was recorded and statistically analysed.

Lesion of BLA increased the intake of all fluids in the single bottle tests ($p<0.01$). But the increase in the group provided with Saccharin was more than that in other two groups. When choice was given with 2 bottles (Sn-Water), the rats which were consuming water during prelesion period shifted to Sn solution. The shifting was not observed when the 2 bottle choice was given with (NaCl - water). When all the 3 types of fluids were supplied together in 3 bottle choice situation, the rats were seeking Sn solution following the lesion.

In our study, it was found that the lesion of BLA increased fluid intake in rats. The intake was more in those rats provided with Sn solution. When choice was given, the rats shifted their preference from water to the Sn following the lesion. Thus this study confirms that BLA is involved in the taste activities and lesion of this nucleus increased the preference in rats for sweet tasting solutions.

Key Words: Taste preference, Basolateral nucleus of amygdala, electrolytic lesion.

F : 42 PROTECTIVE ROLE OF MELATONIN IN LITHIUM - PILOCARPINE MODEL OF STATUS EPILEPTICUS IN RATS

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Status epilepticus is a serious condition and requires immediate treatment. Permanent neuronal damage occurs if the convulsions persists for longer duration. It has been suggested that post ictal refractory period is because of involvement of certain endogenous anticonvulsant substances. We have shown that adenosine could be one of the potential endogenous anticonvulsant substance. The endogenously released pineal hormone melatonin is effective against various type of seizures. However, there is no study on the involvement of melatonin i n status epilepticus. Therefore, the present study was undertaken to investigate the possible role of melatonin in experimental SE. Male wistar rats weighing 150-200 gm were treaed with lithium chloride 3 meq/kg. 4 hrs later pilocarpine 30mg/kg s.c. was administered to induce status epilepticus. All the animals showed cholinergic symptoms, followed by behavioural manifestations e.g. licking, scrathing, jaw movements, tremors and finally forelimb clonus. The mean latency of onset of SE was 16±20 min. Melatonin (200, 400 mg/kg) administered i.p. after 20 minutes of onset was able to arrest frank convulsions. Diazepam 8 mg/kg i.p. also aborted the convulsions. However, as compared to diazepam there was less mortality rate in melatonin (200 mg/kg) at 24 hrs. While, with 400 mg/kg dose the mortality rate was higher. These findings suggest the protective role of melatonin in status epilepticus.

F : 43 ALLIED SCIENCES : YOGA - A NEW PHARMACOLOGICAL INTERVENTION - ERYTHROCYTE MEMBRANE LIPID PEROXIDATION AND Na^+ K^+ ATPase ACTIVITY IN DIABETIC PATIENTS WITH HYPERTENSION : WHO PROJECT

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Erythrocyte from diabetic and hypertensive subjects exhibit some abnormal physical and biochemical functions. Previous reported studies by this group indicate a relationship between these abnormal functions and alternations in cell membrane lipid peroxidation and transport mechanism(s) in both non-insulin-dependent diabetic and hypertensive subjects. A WHO sponsored study was conducted in our Institute on twenty eight NIDDM patients with hypertension and thirty five normal eight NIDDM patients with hypertension and thirty five normal healthy subjects as comparison group who practiced a specific yoga training of one our/day for 30 days. The RBC lipid peroxidation levels and Na^+K^+ ATPase activity were abnormal in patients as compared to control group before Yoga. After Yoga there was significant improvement in hyperglycemia; blood pressure and lipid profile, with decrease in RBC activity lipid peroxidation level and an increase in Na^+K^+ ATPase activity. A yoga training in Institute, followed by at home practice resulted in a decrease in glycated haemoglobin and improvement in self reported quality of life. It is concluded that Yoga protocol designed for study is an acceptable and beneficial for management of NIDDM and/or hypertension.

F : 44 IMMUNOGLOBULINS AND BLOOD GROUPS PROFILE IN GRAVE'S DISEASE

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Grave's disease is an autoimmune thyroid disorder characterized by production of thyroid autoantibodies against TSH receptors, (or a closely related antigen), thyroglobulin or microsomal antigen. Evidences for and against suppressor T-cells defect have been documented. The present study was undertaken to determine the levels of serum IgG, IgM and IgA in this disorder, as change in the activity of suppressor T cells will indirectly change the level of above mentioned immunoglobulins. Present study was further extended by doing ABO blood grouping of these subjects as there are reports of inheritance of this disorder.

Results of present study revealed significantly raised levels of IgG, IgM and IgA as compared to control subjects, as well as in hyper-thyroid patients without autoantibodies ($p<0.01$). This indirectly indicates lack of appropriate population of suppressor T lymphocytes. Presence of maximum number of blood group O in these patients show some relationship between this disorder and inheritance.

F : 45 IODINE DEFICIENCY DISORDERS CONTROL PROGRAMME IN INDIA

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Iodine deficiency disorders is one of the major public health problems of today. They continue to be a threat to health and well-beings of several million people in the world. About 1.5 billion population of the world are at the risk of iodine deficiency disorders but of which more than 200 million are in our country alone.

In order to control the problem of iodine deficiency disorders in the country Government of India is implementing National Iodine Deficiency Disorders Control Programme (NIDDCP) as a centrally assisted programme with emphasis on IDD surveys, supply of iodated salt, laboratory monitoring and health education. The production of iodated salt in the country is about 40 lakh tonnes per annum. The resurvey studies conducted in different districts of various States had very clearly demonstrated that as a result of consumption of iodated salt there was significant reduction in iodine deficiency disorders.

Several countries of the world have eliminated the problem of iodine deficiency disorders through salt iodation. Iodated salt is the simplest and the cheapest way to control this biggest menace in the country. More than 95 per cent districts of the country are covered under the Programme for exclusive supply of iodated salt under the provision of Prevention of Food Adulteration Act 1954. It is expected that by the year 2000 A.D. the prevalence of iodine deficiency disorders will be less than 10 per cent in all the endemic districts.

F : 46 ROLE OF OVARIAN HORMONE RECEPTORS IN THE PROGNOSIS OF CARCINOMA GALL BLADDER DISEASE

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The carcinoma of gall bladder and cholelithiasis are common in females suggesting a role of ovarian hormones in the genesis of gall bladder disease. The process from steroid hormone stimulation to biological response is complicated and not yet fully understood. However, the presence of steroid receptors is a pre-requisite for hormone action. The present study was undertaken to ascertain whether or not ER and PR as tumor markers played a role in the prognosis of carcinoma gall bladder (CaGB) disease as in carcinoma breast. The results of receptor estimations done by EIA using monoclonal antibodies revealed that 42% of CaGB, 15% of cholelithiasis and 20% of normal GB were positive for ER. PR was positive in 72% of CaGB, 33% in gall stones and none in normal GB specimens. PR was more frequently detected in stage III than in stage IV CaGB and PR positive patients showed a better median survival than PR negative cases. The results of the present study suggested that estimation of ovarian hormone receptors in CaGB disease could be of significant prognostic value.

F : 47 HORMONAL AND PSYCHOLOGICAL CORRELATES IN INDIAN ANTARCTIC WINTERING MEMBERS

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Antarctica provides an ideal opportunity to prospectively examine impact of seasons on asymptomatic nonclinical population where the variation in daylight are extreme. Six subjects were drawn from the expedetioners who were wintering over during the 13th Indian Antarctic expedition. They were assessed longitudinally for the

hormonal (cortisol, THS, T3, T4) and psychological (anxiety, depression, and coping resources) changes in December (basal data), March (beginning winter), September (end winter) and February (return journey). Hormonal levels were measured by Radioimmunoassay while for psychological assessment, Zung Depression Inventory, Speilberger Trait-State Anxiety questionnaire and Coping Response Inventory were used. Cortisol was found to increase significantly ($p<0.05$) in Antarctica which returned to pre-wintering level in return journey. Thyroidal hormonal pattern was unaltered. Although no psychopathology emerged but psychological changes did correlate significantly with hormonal changes.

F : 48 ROLE OF VANADATE AND INSULIN ON HEXOKINASE, G-6-PDH AND DEFENSIVE ENZYMES IN DIABETIC RETICULOCYTES

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Experimental diabetes was induced by the subcutaneous injection of alloan monohydrate. Diabetics were treated separately with insulin and vanadate together with similarly treated control rats. The activities of HK and G6PDH were found to increase in reticulocytes haemolysate isolated from the diabetic rats and were restored to normal levels by insulin treatment, and were found to increase by vanadate treatment, possibly affecting the glycolytic rate.

The enzymes for glutathione metabolism like GPx, GR and GST showed increases in their activities with diabetes and restored to almost control values by insulin treatment, vanadate significantly increased GPx and GST almost two-folds and GR eight-folds as compared to the control. The level of SOD decreased in diabetic rats and CAT was not changed. Both these enzymes showed normal values in diabetics treated with insulin and vanadate.

Reticulocytes from controls treated with vanadate, showed increases in all enzymatic levels except SOD and CAT which did not change showing the nature of oxyradicals scavangers.

It may be concluded that vanadate may cause to increase the activity of GR which may be possibly stimulate glucose transporters and pentose phosphate pathway.

F : 49 GUSTATORY CHANGES IN DIABETES MELLITUS

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Effect of high blood glucose levels in diabetes mellitus was studied on gustatory responses to glucose in PTC tasters and non-tasters, before and after the ingestion of a glucose solution. After a 12-h overnight fast, prescreening of Phenylthiocarbamide (PTC) sensitivity was done in each subject, and then each subject tasted, and rated, 7 concentrations of glucose solutions for intensity and hedonic responses. Blood glucose levels were also determined under fasting and then after a 100-g glucose load. A decrease in palatability of the glucose solutions induced by the glucose load (negative allia esthesia) was evident in both groups of subjects. Tasters showed higher hedonic ratings (mean 4-25), as compared to non-tasters (mean 3-70) and this difference was more evident after the glucose load in non-tasters.

F : 50 AMELIORATION OF STREPTOZOTOCIN-INDUCED DIABETES IN RATS BY XENOTRANSPLANTATION OF MONKEY PANCREATIC ISLETS

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In this work, fasting plasma glucose levels were measured before and after inducing diabetes in normal albino rats. The rats were made diabetic by intraperitoneal injection of streptozotocin (50 mg/kg). After inducing

diabetes the fasting plasma glucose level was more than 320 mg/dL. Glucose was present in the urine. Isolated monkey islets were transplanted into these diabetic rats. The islets had been isolated by the collagenase digestion technique. They were separated from acinar cells by dextran gradient centrifugation. About 1700-2000 islets were transplanted under the renal capsule of the rats. The rats were treated with cyclosporine-A immunosuppression. After transplantation the glucose in the urine disappeared. The fasting plasma glucose fell to values less than 120 mg/dL on the second day of transplantation. Weekly estimation of fasting plasma glucose levels showed normoglycemia in these rats. All the transplanted rats survived for more than 35 days. After removing the islet graft (by nephrectomy) the fasting plasma glucose levels rose to more than 300 mg/dL. Histology of the monkey islets graft removed after 35 days showed normal structure. In control rats without the treatment of cyclosporine, normoglycemia was observed for 6-7 days. After that the islets were destroyed and the plasma glucose levels rose to more than 300 mg/dL and the rats died. From this study it is concluded that xenotransplantation of monkey islets can ameliorate experimentally induced diabetes in rats atleast for a short-term period.

F : 51 IMPAIRMENT OF ENDOTHELIUM-DEPENDENT RELAXATION IN AORTAE FROM STREPTOZOTOCIN-INDUCED DIABETIC MONKEYS

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The Indian bonnet monkey model (Macaca radiata radiata) was used to study the vascular changes in the early phase of streptozotocin-induced diabetic monkeys. The effects of endothelium-dependent relaxation to acetylcholine and endothelium-independent vasodilation to sodium nitroprusside on aortae from control and streptozotocin induced diabetic monkeys were examined. Acetylcholine-induced relaxation of aortic strips precontracted with phenylephrine was significantly decreased in diabetic vessels. Relaxation produced by sodium nitroprusside in diabetic preparation was similar to that of control vessels. Hence, endothelium-dependent relaxant to acetylcholine was impaired in diabetic monkey aortae, whereas endothelium-independent relaxation by sodium nitroprusside was not impaired. This suggests that a specific impairment of endothelium-dependent relaxation may occur in diabetes.

F : 52 ENDOMETRIOSIS AND CELL MEDIATED IMMUNE RESPONSE

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The mechanism of infertility in women with endometriosis is not fully understood. Defects in cell mediated immunity (CMI) is one of the factors considered responsible for inducing infertility in endometriosis. CMi was investigated in 10 infertile women with and without endometriosis by determination of number of circulating T cells and mitogen induced lymphocyte transformations. The results showed no difference in lymphocyte transformation between infertile women with and without endometriosis. T cells were also normal in both groups of women. It appears from this study that the infertile women with endometriosis are immunologically competent in response to a mitogen and T cells are normal in these patients.

F : 53 A STUDY OF SERUM BILIRUBIN CONCENTRATION IN RELATION TO DELIVERY

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Serum bilirubin level was studied in neonates by various investigators and reported that neonatal jaundice occurs in 60% of full term and 80% of preterm infants. Most of the work done in this field was confined to pathological jaundice and by foreign investigators. So the present work was undertaken to study the serum bilirubin concentration in cord blood in relation to type of delivery and whether delivery required induction.

Serum bilirubin was estimated by the method of Malloy and Evelyn and data were evaluated statistically using student 't' test and expressed as mean±SD.

Serum bilirubin level was studied in neonates born by normal vaginal forceps and lower segment Caesarean section deliveries and also a comparative study was performed to study the serum bilirubin concentration in cord blood in relation to induction of labour and the deliveries which were not induced.

It was observed in this study that the type of delivery whether normal vaginal forceps or caesarean section does to affect the cord blood bilirubin concentration significantly. The instrumentation in this form of forceps application though caused insignificantly higher serum bilirubin level.

In further study of labour induced and non-induced groups, higher serum bilirubin levels in cord blood were observed with oxytocin induction, this factor was found to be important and statistically significant.

F : 54 GROWTH AND PHYSIOLOGICAL RESPONSES OF NATIVE AND CROSSBRED LAMBS BORN IN AUTUMN SEASON UNDER SEMI-ARID ECOLOGY

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Native (Malpura) and crossbred (Bharat merino) lambs, eight each, born in autumn season were utilized for this study. Physiological responses i.e. rectal temperature (RT), respiration rate (RR) and pulse rate (PR) and growth performance i.e. body weight (BW), heart girth (HG), height at withers (HW) and pin shoulder length (PSL) of lambs from birth to 180 days of age were recorded. No significant difference were observed in physiological reactions of native and crossbred lambs. The birth weights of crossbred lambs were significantly higher ($p<0.01$) than that of native lambs. The body weights of crossbred lambs were comparatively higher from one to six month of age but did not reach to level of significance ($p>0.05$). The values of HG, HW, and PSL of native and crossbred lambs did not differ significantly ($p>0.05$) throughout the study. The results indicated that physiological adaptability and performance of crossbred lambs born in autumn upto six month of age were similar to native lambs under existing environmental condition in semi arid area.

F : 55 ARTIFICIAL IASEMINATION OF NATIVE SHEEP USING FRESH CHILLED AWASSI RAM SEMEN

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To upgrade low producing native and non descript sheep Artificial Insemination (AI) was done in the farmers flocks of semi-arid region. The semen was collected from three Awassi ram and examined for quality characteristics. Ejaculates of thick consistency, rapid wave motion, ≥80% motility and intense movement of motile spermatozoa were diluted @ 1:1 with egg yolk McIlvaine glucose diluent at 30°C in water bath. The A.I was performed during rainy season by depositing 0.1 ml of diluted semen per-os in ewes exhibiting estrus irrespective to the stage of heat. Two flocks of Malpura and Kheri ewes aged 2-8 years consisting of 43 and 41 ewes inseminated for one cycle. The success of AI was assessed on the basis of conception and lambing rate. Out of 84 ewes, 72 ewes conceived and 58 lambed giving a conception and lambing rates of 85.7% and 69.1% in a single insemination. The insemination t early, mid and late heat give a conception rate of 83.2%, 90.9% and 80.0% respectively. The difference in conception rate reveals that the insemination is likely to be more successful at mid stage of heat instead of early and late heat. The age of ewes also had influenced conception and lambing percent. The highest conception and lambing percent was obtained in the ewes of 3-6 years of age group.

F : 56 FREE RADICAL STATUS OF SEMEN AND FERTILITY POTENTIAL IN HUMAN SUBJECTS

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Malondialdehyde (MDA) levels were measured in 80 semen samples obtained from 36 normozoospermic, 24, oligozoospermic and 20 azoospermic subjects. Significant differences in the MDA levels of different groups of subjects were observed. Sperm count showed a positive correlation with MDA levels. Negative correlation between MDA values and percentage of motile spermatozoa suggested the deleterious influences of lipid peroxides on fertility potential.

F : 57 PHASE 1 CLINICAL TRIALS OF "EAZMOV" A POLYHERBAL FORMULATION FOR ARTHRITIS

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Eazmov a polyherbal formulation of Envin Bioceuticals Pvt. ltd. Saharanpur, recommended for Osteo and Rheumatoid arthritis as nutritious regulator, Immune modulator, Antiinflammatory analgesic and disease process modifier has proven effective in various experimental models. Acute and long term toxicity studies have established the GI friendly safety profile of the product. To evaluate the tolerability and safety of the product a phase-1 clinical trial was done in 14 apparently normal male human volunteers who gave informed consent as per Helsinki declaration. Age range was 25-50 (33.14±2.39) years. EazMov was given in a dose of 1 capsule twice daily for 15 days. Pre-treatment and post treatment clinical evaluation (height, weight, pulse, blood pressure and general physical examination) haematological (Hb, TLC, DLC, PCV and ESR) and biochemical tests (serum glucose, proteins, SGOT, SGPT, bilirubin, BUN and creatinine) alongwith routine urine and stool examination including test for occult blood were done. Subjective assessment was also made.

Safety and tolerability of the product was established with no adverse effect on clinical evaluation or haematological/biochemical profile. Stool examination did not show presence of occult blood. EazMov increased the TLC (within normal limits) and reduced ESR particularly in those subjects who showed higher pre-treatment and value. These beneficial effect coupled with the excellent safety and tolerability make EazMov an ideal anti-arthritic for human use.

F : 58 EFFECT OF CAMPHOR ON WOUND HEALING : AN EXPERIMENTAL STUDY

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The use of camphor for skin diseases is recommended since ancient time all over the world. Topical application of camphor in coconut oil has been effective in burn cases in a clinical trial. The present study was undertaken to evaluate the effect of camphor on the process of wound healing in rats.

Albino rats of either sex (180-200 g) were divided into 3 groups of 10 each. (Group I - Saline treated, Group II - White soft paraffin, Group III - Camphor ointment 10%, 4 times daily). Circular (10 mm dia.) full thickness surgically excised wound was made under ketamine (50 mg.kg, i.p.) anaesthesia over the dorsum of rat after shaving and thorough cleaning. Process of wound healing was monitored by observing the gross and histological changes during healing day. Scar features, time required for complete epithelization was monitored in control and study groups.

Gross (physical) as well as histological results showed that camphor oint, promote wound healing in rats.

F : 59 THE EFFECT OF INDIGENOUS DRUGS ON HEART MUSCLE

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A comprehensive study of extract of Garlic (Allium sativum) and Bael (Aegle Marmelos) on twenty isolated chicken hearts were carried out. Study shows garlic has +ve chronotropic and +ve inotropic effect whereas Bael decreases the force and rate of contraction of chicken heart. This shows further study on these indigenous drugs can lead to their use in therapeutic purpose.

F : 60 AMAZING EFFECT OF BACH FLOWER MEDICINES AND HYPNOSIS FOR CURE OF DEPRESSION

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A young girl, aged 17 years, studying in the 1st year B.A.M.S., suddenly started remaining absent for college lectures. She complained of hearing voices and could not concentrate on her studies. She began to lose confidence in her abilities; and suffered from anorexia, insomnia and anaemia.

She was treated by the Psychiatry Department for six months with electric shocks, tranquilizers and sedatives, due to which, she was constantly drowsy, and could not concentrate while studying.

I treated her with Larch and Minulus in order to regain her confidence and for getting rid of fear. "Impatience" was given to cure her impatient nature.

Also, she was subjected to daily hypnotic sessions, in which suggestions were given to increase her confidence.

After a month, she showed remarkable improvement and her inferiority complex was cured. Gradually she started studying and though she failed in her first attempt, she passed with good marks in her second attempt with more than 55% marks.

Now she is completely free from all the symptoms and is fully confident, and is doing very well in her studies.

Key Words: Larch, Mimulus, Impatience, Hypnosis.

F : 61 EFFECT OF EMBLICA OFFICINALE AND AEGLE MARMELOAS ON SWIMMING INDUCED STRESS IN MICE

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E. officinale (Anwala) and A. marmeloas (Belpatra) are the most important rasayan of preparation of ancient Indian medical science in present study. Therefore, it was thought worth while to investigate its anti tress activity of E. officinale and A. marmeloas by testing its effects on swimming endurance in mice. Total extract of E. officinale (1 gm/kg PO) and A. marbelous per kg body weigh 1 gm P.O. for one week was given to one group of mice, another group of mice was kept as control. After one week the swimming test was performed it was found that the treated group of mice swimmed for significant longer duration than the controlled group. It is therefore, concluded that both of these extracts are prostress in nature.

F : 62 BETAINE REVERSES TOXIC EFFECT OF ALUMINIUM

T RAMA KRISHNA, S VATSALA, V SHOBI
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Impairment of T-maze performance of adult rats caused by Aluminium (Al^{3+}) and the reversal of it by betaine, a methyl donor was studied. Besides, conformational change in the secondary structure of ß-amyloid peptide (Aß) brought about by the addition of Al^{3+} in vitro was also studied using CD-spectrum. The organismal study proved that

betaine is effective in restoring the memory loss caused by Al^{3+} possibly through augmentation of choline levels as the betaine is involved in the synthesis of choline. The CD-spectra recorded indicate loss of α-helical content of the peptide (Aß) caused by the addition of Al^{3+}, which was reversed to some extent by the addition of betaine. Betaine may thus prevent/stop the progression of plaque formation seen during the initial stages of Alzheimer's disease (Ad) and Ad like pathology as the loss of secondary structure of Aß is suspected to be an early event in the aetiopathology of AD/AD like perturbations caused by A1 toxicity. Betaine, a natural product occurring in beetroot (*Beta vulgaris*) and a by product in the process of manufacturing beet sugar may thus prove efficacious in the treatment of diseases involving dysfunctions of cholinergic system leading to memory loss.

Key Words: Aluminium, Toxicity, Impairment, Memory, ß amyloid, α helix, loss, antidote, betaine

F : 63 ROLE OF GABA-A AND MITOCHONDRIAL DIAZEPAM BINDING INHIBITOR RECEPTORS IN THE ANTISTRESS ACTIVITY OF NEUROSTEROIDS IN MICE

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Neuroactive steroidal modulation of immobilization-stress and possible involvement of GABA-A and mitochondrial diazepam binding inhibitor (DBI) receptors (MDR) has been investigated in mice. Immobilization of mice for two hours induced intense antinociception, anxiety state, and associated with a fall in adrenal ascorbic acid levels. Pretreatment with high dose of progesterone (10 mg/kg), a precursor of neurosteroids, significantly decreased the stress-induced antinociception, anxiety and fall in adrenal ascorbic acid, while low doses (1 and 5 mg/kg) or hydrocortisone (10 and 100 mg/kg) were ineffective. In contrast, progesterone (1 mg/kg, for 9 days) produced a significant antistress effect, which was blocked by GABA-A antagonists picrotoxin (1 mg/kg) and bicuculline (1 mg/kg), but not by flumazenil (2 mg/kg), a specific benzodiazepine (BZD) antagonist. 4-Chlordiazepam (0.1 and 0.25 mg/kg), a selective partial agonist of MDR and with bicuculline (1 mg/kg), a potent GABA-A receptor antagonist. At higher doses, progesterone and 4'-chlordiazepam which are effective in immobilization stress also reduced locomotion. However, lower doses of progesterone any motor toxicity on rotarod test. At the lower doses, the MDR ligand 4'-chlordiazepam (50 µg/kg) decreased locomotor activity without altering motor toxicity on rota-rod test. Further, the per se effects of these treatments on unstressed mice were not significantly different from that of untreated controls, except for plus maze test. The antistress profile of progesterone may be attributed to the in vivo production of neurosteroid allopregnanolone, thus resembled that of BZDs. Furthermore, the antistress actions are flumazenil-resistant, reaffirming that there may be an increase in the levels of pregnane neurosteroids in vivo, which may act on a specific allosteric site on GABA-A receptors distinct from BZD site. Because 4'-chlordiazepam binds to MDRs and stimulate mitochondrial neurosteroidogenesis, the anti-stress effects of 41-chlordiazepam binds to MDRs and stimulate mitochondrial neurosteroidogenesis, the anti-stress effects of 41-chlordiazepam may be imputed to its MDR-induced neurosteroids, which then act on GABA-A receptors. These data suggest a pivotal role for GABA-A and mitochondrial DBI receptors in the antistress actions of neurosteroids and reinforces their ameliorative effect in physiological stress (Psychopharmacology 1997, 128:280-292).

F : 64 NITRATE LEVELS IN THE SERUM AS AN INDEX OF NITRIC OXIDE SYNTHASE ACTIVITY IN HEALTHY INDIAN MALES

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Studies have shown that serum nitrate levels are altered in conditions like sepsis, refractory hypotension, liver cirrhosis, diabetes and hypertension. So this study was aimed to standardize the procedure and estimate the normal serum nitrate levels in serum of healthy human subjects. Nitrate reductase enzyme from Aspergillus species was used which converted nitrate to nitrite in the presence of B-NADPH. The concomitant oxidation of B-NADPH was monitored by the decrease in absorbance at 340 nm.

Serum samples from 15 healthy males (18-30 years) was obtained after over night fasting. Enzymatic assay was performed and then incubated for 45 mins in darkness. The absorbance values were measured and serum nitrate levels were calculated. Serum nitrate levels were found to be with a mean±SD 10.64±6.40 of which are comparable with studies done by Boreis et al. in France.

F : 65 IMPACT OF AMITRIPTYLINE TREATMENT ON BRAIN AMINES IN AMINO ACIDS IMBALANCE

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The effects of amino acid imbalance on the response of the brain to amitriptyline (a tricyclic antidepressant) treatment in terms of changes in the levels of biogenic amines and its metabolites were investigated.

Male rats of Wistar strain and weighing 50-60 g were included in the present study. Amino acid imbalance was induced by feeding rats a 6% casein diet supplemented with 0.3% L-threonine, while rats receiving a 6% casein diet served as control animals. The rats were maintained on these diets for 27 days. The animals of both control and amino acid imbalanced groups received treatment with amitriptyline at a dose of 0.5mg/100 g b.w. twice daily for three days prior to sacrifice.

Serotonin (5-HT), norepinephrine (NE), dopamine (DM) and 5-hydroxyindole acetic acid (5-HIAA) levels of discrete areas of brain (cortex, cerebellum, hypothalamus, pons-medulla and midbrain) were measured. In addition, 5-HIAA levels of liver and plasma were measured. The 5-HT, NE, DM and 5-HIAA levels increased in certain discrete areas while decreased in other areas of brain following treatment of control rats with amitriptyline. These responses of brain to drug treatment were either maintained, decreased or increased in intensity or even reversed in amino acid imbalance depending on the discrete areas of the brain. In either group liver 5-HIAA level increased and plasma 5-HIAA level decreased following amitriptyline.

These findings suggest that the changes in the turnover of the brain biogenic amines following amitriptyline treatment could be modulated by induction of amino acid imbalance.

F : 66 ANTINOCICEPTIVE EFFECTS OF MORPHINE, PENTAZOCINE AND BUPRENORPHINE IN STZ-D FEMALE RATS

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There is considerable evidence that suggests modulation of responsiveness of nociceptive stimuli and morphine with the alterations in blood glucose levels. The influence of hyperglycemia on antinociceptive efficacy of morphine, pentazocine and buprenorphine was studied in female diabetic rats. Rats were rendered diabetic with streptozotocin (50 mg/kg IV). STZ-D rats were subjected to tail flick test and writhing test before and after the drug treatment.

There was significant attenuation of antinociceptive responses ($p<0.001$) of morphine (5 mg.kg IP) and buprenorphine (2 mg/kg IP) in STZ-D rats. The effect was more marked with morphine compared to buprenorphine, whereas, the antinociceptive response of pentazocine (20 mg/kg IP) remained unaltered despite hyperglycaemic status of female rats.

F : 67 EFFECT OF CALCIUM CHANNEL BLOCKERS ON RESERPINE INDUCED RIGIDITY, PTOSIS AND CATATONIA

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It has been shown that calcium channel blockers (CCB) alters the release of central neurotransmitters. Reserpine affects turonver and uptake of catecholamines. In the present study effect of CCB were investigated on

reserpine induced rigidity, ptosis and catatonia according to the method of Goldstein et al. (1975), Rubin et al. (1957), and Morpurgo (1962) respectively. The animals used in the study were albino rats weighing 200-250 g. Drugs used were verapamil, diltiazem, nifedipine and reserpine. All the drugs including reserpine were administered by intraperitoneal route and effect on rigidity, ptosis and cataronia were observed 1, 2 and 4 h after reserpine (5 mg/kg) administration respectively. CCB were administered 15 min. before the reserpine. Ptosis was inhibited by Verapamil (10,20 and 40 mg/kg), diltiazem (40 and 80 mg/kg) and nifedipine (25 and 50 mg/kg). Verapamil (20 and 40 mg/kg), diltiazem (80 mg/kg) and nifedipine (50 mg/kg) blocked the reserpine induced rigidity and catatonia. In conclusion, CCB inhibited reserpine induced changes in rats which may have a clinical significance in neuropsychiatric disorders.

F : 68 CENTRAL NERVOUS SYSTEM ACTIVITY OF SOME INDOLE DERIVATIVES: PRELIMINARY SCREENING

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Indole derivatives have been reported to possess central nervous system depressant activity. In view of this, various 1-(3-aminopropyl) indoles, 1,4-diazepino indoles and 1,2,3,4 - tetra hydropyrazine indoles were synthesized and screened for their CNS depressant action.

Adult mice of either sex were used for experiments.

Following paramters were studied, according to the methods described by Bhargava and Gupta et al. (1977).

(1) Corneal reflex
(2) Pinna reflex
(3) Flexion
(4) Extension thrust
(5) Sedative ataxic score (SAX)

In addition, sedative ataxia and locomotor performance (Kouzmanoff et al. 1958) of mice were evaluated.

Mice were tested for CNS actions 30' before and at every 30' after drug administration for 2 hrs and then after 4 and 24 hours.

Test drugs were administered intraperitoneally in the dose of 200 mg/kg body weight.

In the present study, 32 compounds were screened; 3 compounds did not show any CNS activity. Of remaining 29 compounds, 20 compounds showed CNS depressant action, while 9 compounds were found to be CNS stimulants.

Amongst 20 compounds with CNS depressant activity, one compound showed significant, 6 had moderate and rest showed milder activity. Amongst 9 compounds with CNS stimulant activity, 5 compounds exhibited moderate and remaining 4 had milder activity.

These observations suggest no rigid relationship between CNS activity of the compounds listed and their structure.

F : 69 ANTIHISTAMINIC ACTIVITY OF SOME INDOLE DERIVATIVES

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In the present study various 1-(3-amionopropyl) indoles 1,4-diazepino indoles and 1,2,3,4-tetra hydropyrazine indoles were evaluated for their antihistaminic activity.

Isolated uterine strip of virgin female rats in oestrous cycle were utilized for the experiment as per the method of Erspamer 1953. 2 mcg of histamine base was used as agonist to produce 75-80% of contractions of rat uterus in 30 seconds. Test drugs were administered one min. prior to histamine and inhibition of histamine induced contractions were noted. Dose response curves were obtained and ED-50 was calculated for each drug.

Of 53 compounds screened for antihistaminic activity, 21 showed varying degrees of inhibitory action on histamine-induced contraction of rat uterus. Among the 21 compounds, 9 exhibited significant inhibitory action and the remaining 12 showed moderate inhibitory activity. Blockade produced by test drugs was recovered after 2-3 washings within 10-15 minutes and histamine contractions could be reproduced.

These observations are suggestive of antagonistic activity of test compounds.

F : 70 LAB TO LAND TRANSFER OF A CYTOKINE BASED IMMUNOTECHNOLOGY

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A heat stable 12.7 KD secretory peptide (BIM) has been isolated from rodent bone marrow. BIM showed immunomodulatory properties in immunosuppressed animals. Both T/B cell functions and macrophage/neutrophil phagocytic activities were found to be imrpoved which rendered protection to a wide variety of diseases. BIM showed both autocrine (on bone marrow) and paracrine (on brain, kidney, thymus, spleen) functions and its secretion is probably regulated by the autonomic nervous system. Recently, it has been shown that BIM has anti-implantation effect. The first 20 amino acid sequence of BIM showed significant homology with other animal and human ILs (IL11, IL12, IL14). This nonspecies specific character of BIM has been employed to improve immunocompetence of poultry in commercial farms plagued with a number of fatal diseases viz., New Castle Disease. When used with NCD virus vaccine BIM improved the antibody titre by 3-folds over control within 2 weks of vaccination. To date BIM has been used on more than 8 lakh chicks. The overall mortality rate dropped from 40% to less than 5%. This has opened a new cytokine based immunotechnology to combat diseases.

F : 71 CARDIOACCELERATOR ACTION OF ANGIOTENSIN II (A REVIEW)

SD NISHITH
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It has been demonstrated that angiotensin II has cardioaccelerator effect. This cardioaccelerator effect is masked by baroreflexes which are stimulated by the rise of BP due to vasopressor action of angiotensin. Various sites of action of angiotensin have been postulated.

The other possible mechanisms thought are secretion of catecholamines from adrenal medulla and from sympathetic supply to heart and direct action of angiotensin on pace-maker.

On isolated atrial preparations angiotensin II shows this cardioaccelerator action.

F : 72 EFFECT OF A CHEMOCONVULSANT PENTYLENETERAZOLE ON GASTRIC EMPTYING IN RATS

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Association of various neurological conditions such as head injury, raised intracranial pressure, migraine and epilepsy and vomiting is a known fact. Epileptic seizures are also often associated with gastrointestinal changes. the significance of this has been highlighted by the recently described term ictus emeticus, wherein, vomiting is the

major ictal phenomenon. Emetic episodes in neurological condition particularly epilepsy may pose a serious threat to the patients, due to, the high risk of aspiration and death. Research in epilepsy is mostly done in rodents, which do not have emetic reflex. We have shown that the emetic agents cause inhibition of gastric emptying which is prevented by antiemetics. The present study was therefore, conducted to see the effect of pentylenetetrazole (PTZ), a commonly used convulsant on gastric emptying in rats.

To delinate, if PTZ has a direct effect on the GIT, the per se effect and effect on contractions induced by spasmogens, acetylcholine (ACh), 5-HT and histamine (HA), in isolated guinea pig ileum was also studied. In gastric emptying experiments, after overnight fasting, rats were pretreated with subconvulsan doses of PTZ 30 and 45 mg/kg. i.p., 30 min before administration of 1.5 ml of a test meal (0.05% phenol red in 1.5% methyl cellulose). Animals were sacrificed 30 min. after meal for determination of % gastric emptying.

PTZ at both the doses, significantly, reduced gastric emptying to 11.72% and 8.94% resepctively vs. 89.12% in control animals. In studies on isolated guinea pig ileum however, PTZ per se even upto a bath concentration of 1 mg/ml failed to exhibit any effect. When, the ileum was incubated with PTZ at different concentrations, (0.5 ng to 1 mg/ml), only at higher concentrations, Ach and 5-Ht induced contractions were inhibited, while, HA- induced contractions remaiend unaffected. However, the concentrtions at which inhibition occurred is unlikely to be reached with the doses used for gastric emptying experiments. Therefore, the results indicate that the chemoconvulsant pTZ inhibits gastric emptying in rats and this is unlikely to be due to a direct GI action of this drug.

F : 73 EFFECT OF AEGLE MARMELOS (BAEL) ON INTESTINAL SMOOTH MUSCLE

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Medical plants claim to have therapeutic properties and advocated for treatment have been investigated for their physiological action on intestine of toad and chicken.

A comprehensive study of extracts of Aegle Marmelos (Bael) was undertaken and its action on ileum of chicken and toad were observed. The effects were varied in both species where it showed stimulatory effect on chicken ileum but in toad no significant change was observed.

F : 74 STIMULANT EFFECT OF MACROLIDE ANTIBIOTICS ERYTHROMYCIN AND ROXITHROMYCIN ON INTESTINAL MOTILITY IN ALBINO RATS

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Erythromycin is reported to stimulate g.i. motility in dogs; and accelerates gastric emptying in patients with primary anorexia nervosa and idiopathic gastroparesis.

The present study was undertaken to confirm the stimulant effect of erythromycin on g.i. motility in rats and to explore whether roxithromycin, another macrolide antibiotic, also possesses such a property.

Adult albino rats of either sex, weighing 160-240 G fasted overnight, were divided into groups of 6 animals. Each group received saline (control), erythromycin (45 mg/kg) or roxithromycin (135 mg/kg). All animals received one ml of aqueous suspension of 10% charcoal meal in 5% gum acacia, 15 min after the administration of drugs. The effects of drugs were observed on gastrointestinal propulsion in intact animal as described by Jansen and Jagenau (1957).

Both the drugs, erythromycin and roxithryomycin significantly ($p<0.01$) enhanced gastrointestinal transit. Further studies are needed to probe into the stimulant effect of macrolide antibiotics on g.i. motility.

F : 75 EFFECT OF CAPTOPRIL, VERAPAMIL AND ATROPINE ON GALL BLADDER EMPTYING IN ALBINO MICE

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In the present study, captopril (ACEI), verapamil (calcium channel blocker) and atropine (anti-muscarinic) were investigated for their influence on gall bladder and its emptying by oral fatty meal (egg yolk).

Adult female mice were used for experiments. Gall bladder weight was measured 30' after the test drug or 15' after egg yolk meal, or both. Animals were sacrificed after decapitation and gall bladders were dissected out and weighed.

Captopril in the dose of 100 mg/kg I.P. emptied gall bladder (81%). Verapamil 15 mg/kg I.P. and atropine 1 mg/kg I.P. had no significant effect on gall bladder weight. Subsequently, effect of these drugs on gall bladder emptying by egg yolk meal were studied. Captopril had no effect, whereas, verapamil and atropine inhibited gall bladder emptying by egg yolk meal to the extent of 44.82 and 51.56% respectively.

Atropine is known to inhibit gall bladder emptying. Verapamil has reduced gall bladder emptying by egg yolk probably by its smooth muscle relaxant property as calcium channel blocker. Captopril emptied the gall bladder partially and did not modify the effect of egg yolk.

Further work is reuqired to establish the exact mechanism of action of captopril.

F : 76 COMPARATIVE INVOLVEMENT OF PARASYMPATHETIC AND SYMPATHETIC FUNCTION IN IRRITABLE BOWEL SYNDROME

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Autonomic dysfunction in irritable bowel syndrome (IBS) has been documented earlier. There have been conflicting reports about individual involvement of parasympathetic and sympathetic reactivities. This study was designed to explore the comparative involvement of parasympathetic and sympathetic divisions of autonomic nervous system in subgroups of IBS patients. The autonomic reactivity of 35 IBS patients (based on Rome Criteria) was assessed by using standard autonomic function tests (three parasympathetic and three sympathetic). In three subgroups of IBS patients (constipation = 18; diarrhoea = 14; pain = 3) the autonomic reactivity score was worked out by statistical criteria (normal = mean$\pm$1SD; borderline = mean$\pm$1SD to $\pm$2SD; severe = more than $\pm$2SD). Reference mean and SD for normal were determined from 30 age matched healthy controls. Normal reference intervals were calculated statistically. Autonomic scores (similar to Ewing's criteria) of IBS patients were calculated comparing individual values with reference intervals and had a range of -6 to +6 depending on autonomic involvement. The patients with IBS showed severe type of hyperparasympathetic response [score>4 (74.2% patients); score 2 to 4 (22.8% patients)]. Sympathetic score was distributed equally on both sides of normal mean (hyposympathetic = 12; hypersympathetic = 16) although they had wider distribution than normals. It is concluded that both predominant types of IBS patients had higher parasympathetic reactivity without a conclusive change in sympathetic reactivity.

F : 77 TRENDS IN BLOOD PRESSURE MONITORED IN HEALTHY HUMAN VOLUNTEERS PARTICIPATING IN PHASE I CLINICAL TRIALS

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Blood pressure is considered to be a pharmacodynamic parameter which shows considerable variation due to sociodemographic factors which are of paramount importance in planning a clinical trial protocol for phase I

clinical studies essentially requiring healthy human subjects. During phase I clinical trials healthy human volunteers receive for the first time new chemical entities having potential to become future drugs. These trials are undertaken with the objective of establishing and tolerance of new chemical entities (NCE) after single and multiple dose administration for a specified period of time.

At CDRI, Lucknow from 1971 onwards nearly 20 newly developed compounds have been subjected to phase I clinical trials. The baseline data on these healthy volunteers have been analysed critically for evaluation of safety and tolerability of NCE on each parameter. Since normal values for different parameters are often age, gender and race dependent, therefore, age related scatter plots for each parameter like body weight, respiratory rate, pulse rate, blood pressure (BP), Hb, PCV, TLC, DLC, ESR, SGOT, SGPT, ALP, TT, S. urea, S. glucose, S. proteins, S. albumin, S. globulin and S. cholesterol have been developed. Trend analysis for certain parameters like body weight, BP, S. glucose and S. cholesterol has revealed increase in their values with increasing age. Correlation matrix of all the variables provides useful data on healthy human subjects. Since blood pressure is an important parameter which changes with the age, therefore, the present data analysis provides an opportunity to look for the trends in healthy human volunteers belonging to different age groups.

F : 78 DISPOSITION OF CENTCHROMAN IN LACTATING AND NON-LACTATING WOMEN

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Centchroman (INN : Ormeloxifene), a nonsteroidal oral contraceptive agent, is marketed with the recommended dose of 30 mg twice a week for 12 weeks followed by 30 mg once a week. Since a variety of therapeutic agents are known to be excreted in breast milk, the present study aimed to assess the pharmacokinetics of centchroman after a single 30 mg dose and the amount of centchroman excreted in the breast milk and subsequent exposure of the breastfed infants.

Following approval from the Institutional Ethics Committee, 11 normal (group I; age =28.8±4.6 yrs, body weight=46.2±8.9 kg) and 4 nursing women (group II; age=32.3±3.8 yrs, body weight=44±7.9 kg) were recruited. Each woman, after fasting overnight, received a 30 mg tablet of centchroman. Serial blood and breast milk samples were collected from 1 to 672 h after the dose and centchroman concentrations were determined by previously developed HPLC method. In group I, serum C_{max} (30.45-78.41 ng/ml) were observed after 3 to 8 h of dose and the concentrations declined bi-exponentially with elimination $t_{1/2}$ 165±49 h. Insignificant differences in C_{max} (50.08-79.74 ng/ml), t_{max} (6 h) and $t_{1/2}$ (160±52.7 h) were observed between I and II group. The similarity in the pharmacokinetic parmeters betwen nursing and non-nursing women suggested that adjustment in dosage regimen for nursing women be not needed. However, C_{max} (70.7±27.5 ng/ml) occurred later (t_{max}, 6-10 h(in milk than in maternal serum. In group II, the milk/serum (M/S) AUC ratio was 1.42±0.56. The average infant dose of centchroman via breast milk, assuming a weekly intake of 1.05 L/kg and 100% absorption, would be 7.4±3.2% per week of the maternal dose and would not be of any physiological consequences to breastfed infants.

F : 79 VERATRINE INCREASES AP DURATION IN G.PIG PAPILLARY MUSCLE SUGGESTING A ROLE OF KNa CHANNEL IN REPOLARIZATION

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The configuration of repolarization phase of cardiac action potential (AP) is determined by contributions from several ionic channels. The later phase of repolarization, i.e. phase 3 [around 90% repolarization (ADP90)] is largely due to K channel activity. It has been suggested that [Na]i dependent K channels (KNa) also contribute to cellular repolarization. This hypothesis was tested by observing the effects of veratrine, which enhances Na channel activity leading to increase in [Na]i on AP of g.pig papillary muscle employing the glass microelectrode technique.

The results show that veratrine (1 μg-16 μg) by itself had no significant effect on resting membrane potential but increased the entire AP duration. In particular the AP duration at 90% repolarization (ADP90), an indication of K channel activity, was increased dose dependently with this drug. Amiloride an indication of K channel activity, was increased dose dependently with this drug. Amiloride (upto 2 mM), a Na, Ca exchange blocker, also increased the entire APD indicating contribution of INa, Ca to repolarisation process. When amiloride was added in presence of veratrine or vice versa the prolongation of ADP90 was significantly reduced. The increase in APD90 by veratrine indicates its indirect potentiating effect on 1Na, Ca whereas reduction of this increase in presence of amiloride may be explained by assuming that elevation of [Na]i by veratrine could have led to enhanement of the activity of KNa channels under these conditions. These findings indicate a role of KNa channels in repolarization of cardiac AP. Further work to assess the role of KNa channels in repolarization phase of cardiac AP, particularly by obviating the contributions of Na, K-pump current is in progress.

F : 80 EVIDENCE OF OPEN CHANNEL BLOCK OF L TYPE Ca^{++} CHANNELS BY FENDILINE IN G.PIG PAPILLARY MUSCLES

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Ca^{++} channel blockers are reported to inhibit L type Ca^{++} channel activity by several mechanisms. 1,4-dihydropyridines like nifedipine are reported to preferentially block inactivated channels while verapamil, a phenylalkylamine derivative causes open channel block. Block of the channels in resting state has been reported for diltiazem as well as for nifedipine. In earlier studies it was observed that fendiline, a diphenylalkylamine derivative, blocks L channels in ventricular myocytes by preferentially acting on inactivated channels. Since this model did not explain the total Ca^{++} channel blocking activity of fendiline, the question whether it also causes an open channel block was tested on isolated guinea pig papillary muscle using glass microelectrode technique. Fendiline (0.1 to 320μM) caused a dose dependent inhibition of action potential duration at -20 mV (APD_{20}) without any effect on resting membrane potential. This inhibitory effect was very weak at 0.2 hz increasing substantialy at 2 Hz. This frequency dependence of inhibitory effect on APD_{20} without any accompanying reduction of resting potential clearly suggests frequency dependence of block of Ca^{++} channel by fendiline indicating an open channel block. It is concluded that fendiline is a unique type of Ca^{++} channel blocker causing inhibition of Ca^{++} channel activity both in the inactivated as well as the open states of the L channels.

F : 81 CHRONOTHERAPY : A COMPARISON TO EXISTING METHOD OF TREATMENT

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Chronobiology is the study of body, when the rhythm forms the basis of treatment it is called as Chronotherapy. In this method of treatment the timing of drug delivery is based on biological clock of the body.

The existing method of treatment do not have enough consideration of biological rhythm; due to that the drug may lose most of its effect at the time it is required most.

In the present study the comparison of new method with the old regime has been done to find out the difference if any. The patients with uncomplicated mild to moderate hypertension were included in this study. Two separate groups were made and all of them were subjected to long acting β-blocker Atenolol but at different time. The result indicate that chronotherapy may be more useful in treating hypertension.

F : 82 COMPUTER ASSISTED LEARNING IN EXPERIMENTAL PHYSIOLOGY

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Basic sciences and preclinical teaching of medical students has a vast scope for computer assistance. It may, for example significantly reduce the need for a laborious and time consuming procedures like dissection,

traditional teaching on frogs, rabbits and other animals. With the invasion of multimedia, it is thought that traditional methods of preclinical teaching can be given a high boost experimental topics like muscle contraction, EMC, ECG, arrhythmias, pulse, ECG, respiratory air flow and lung capacities, exercise testing, biofeedback studies and reaction time.

Recent years have seen entry of computers in medical imaging techniques, simulated surgeries on various organs prior to any complex elective surgical procedure, cardiovascular status or pulmonary function assessment, patient data record and its most extensive usage in various laboratory diagnostic equipment.

We need to train medical students in areas which have more of human applications and the knowledge thus acquired can be very efficiently put to use when they graduate to clinical subjects.

Key Words: Simulated learning

F : 83 TOBACCO SMOKING - A PROBABLE CAUSE OF EOSINOPHILIA

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A number of blood eosinophilic studies were performed on 3 cases of chronic smokers with leucocytosis and an unexplained eosinophilia. The eosinophil counts were done by puncture of finger and subsequent dilution (1:10) using eosin stain. The counts were done daily between (1:10) using eosin stain. The counts were done daily between 10 a.m. and 11 a.m. and usually within an hour after collection of the blood sample. Each of the subjects tested used to smoke on an average 10 to 15 cigarettes per day forth the past 4-5 years.

Three out of ten cases of smokers with leucocytosis and an associated eosinophilia showed a decrease in eosinophilia showed a decrease in eosinophils on refraining from smoking, with an increase in their number, once the habit was resumed. Further, ten volunteers (non-smokers) showed a definite rise in eosinophils when smoking was initiated. The observation of Harkavy on intracutaneous injection of tobacco extracts suggests eosinophilia to be an allergic response to tobacco smoke.

F : 84 STUDY OF SERUM ELECTROLYTES IN DEPRESSION PATIENTS

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Serum electrolytes (Na^+, K^+, Ca^{++}) in normal healthy control and depressed patients without any antidepressant therapy, were measured. Depression patients had highly significant lower values of serum Ca^{++} and significantly higher values of serum K^+. The implication of these differences in serum electrolytes in depressed patients will be discussed.

F : 85 MEASUREMENTS OF THE MICROWAVE POWER DENSITY AT VARIOUS DISTANCES FROM HELMET MOUNTED MILLIMETER WAVE RADIATING HORN ANTENNAS

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Defence Electronics and Applications Laboratory, Dehradun designed and fabricated helmet mounted millimetric wave radiating horn antennas for soldier to soldier communication in the field area operating at 35 GHz frequency in the receiving and transmitting modes. Measurements of millimetric wave power density from two helmet mounted millimeter wave radiating horn antennas were made at various distances on three axis representing three planes - in the direction of propagation (Z axis), horizontal axis perpendicular to the direction of propagation (Y axis) and vertical axis (X axis) and inside the helmet, close to the metallic plate at 17 locations and 10 cm away from

it with the help of Narda 8723 broadband isotropic microwave probe (0.3 - 40 GHz, 0.05 - 100 mW/cm^2). For each distance point on Z axis (15 cms intervals on X axis and 4 probe locations on Y axis. The results revealed no leakage of microwave power inside the helmets. There was a great variability of microwave power emitted, closest to the horn antenna (2.5 - 5 mW/cm^2 and 6-10.5 mW/cm^2 for helmet nos. 1 & 2 respectively). As the distance from the horn antenna increased in the direction of propagation, the power density dropped to 0.04 mW/cm^2 or 0.075 mW/cm^2 maximum value at a distance of 1 meter. The values recorded are within the ANSI safety guidelines (10 mW/cm^2 at 35 GHz) and hence there is no reason for any alarm.

F : 86 ANTINOCICEPTIVE EFFECTS OF MORPHINE, PENTAZOCINE AND BUPRENORPHINE IN STZ-D FEMALE RATS

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There is considerable evidence that suggests modulation of responsiveness of nociceptive stimuli and morphine with the alterations in blood glucose levels. The influence of hyperglycaemia on antinociceptive efficacy of morphine, pentazocine and buprenorphine was studied in female diabetic rats. Rats were rendered diabetic with streptozotocin (50 mg/kg IV). STZ-D rats were subjected to tail flick test and writhing test before and after the drug treatment.

There was significant attenuation of antinociceptive responses ($p<0.001$) of morphine (5 mg/kg IP) and buprenorphine (2 mg/kg IP) in STZ-D rats. The effect was more marked with morphine compared to buprenorphine, whereas, the antinociceptive response of pentazocine (20 mg/kg IP) remained unaltered despite hyperglycaemic status of female rats.

F : 87 CSF AND SERUM LDH & ITS RATIO IN TUBERCULOUS AND PYOGENIC MENINGITIS IN CHILDREN

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Total lactate dehydrogenase (LDH) activity was estimaetd in CSF and serum in 64 cases of tuberculous meningitis (TBM), 60 cases of pyogenic meningitis (PM) and 39 cases of controls in pediatric age group. In cases with TBM, mean CSF-LDH was 3.26 times higher ($p<0.001$) whereas mean serum LDH was only 1.23 times higher ($p<0.001$) than the control values. In cases of PM, CSF - LDH activitywas 3.69 times and mean serum LDH activity was 1.52 times higher than the control values and the difference between the two groups were insignificant ($p>0.05$). The ratio of CSF/serum LDH activity did not show any significant alterations in these diseases. Above ratios were almost double in TBM and PM as compared to controls which shows that there is an increased LDH activity in CSF during meningeal inflammation. This ratio ($p<0.001$) is of considerable significance in diagnosing the presence of meningeal infection, be it of tuberculous or pyogenic nature, however, individual ratio by itself is non-significant ($p>0.05$).

Total LDH activity in both CSF and serum was estimated by method of King.

F : 88 BONE CHANGES DURING SIMULATED WEIGHTLESSNESS

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IAM, IAF, BANGALORE.

Weightlessness environment of long duration space mission results in decreased mineralisation of the weight bearing bones. Hind limb unweighing (HU) in rats by tail suspension was used to simulate the effect of weightlessness on tibia. Adult male albino rats were divided into two groups as (i) control (CON, n=12) and (i) HU for 15 days (HU,

n=18). After 15 days tibia from all the animals were removed and subsequently dried, ashed and then calcium content of the bones were determined. HU resulted in atrophic changes in the weight bearing bone tibia due to the reductions of water content (-35.8%), organic matrix (-12.2%) and calcium content (-33.4%). The reduction in the dry tibia wt (-13.5%) was due to proportionate reductions in the organic matrix and total mineral content of the bone. The reduction in the mineral content was solely due to the reduction in calcium content of the bone.

F : 89 EATING DISORDERS IN MEDICAL STUDENTS

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A large number of studens carried out in the western world in the last two to three decades have indicated varying prevalence rate of Anorexia neryosa and Bulimia nervosa. The incidence of the disorders ranges from 0.24 to 14.6 per 100,000 of female population per annum. However, very little information regarding the pervalence, nature and extent of eating disorder is available in nonwhites, other culture and regions of the world.

The present study consisting of 100 MBBS medical students of first professional who were given two screening instrument, the 40 item eating attitude test and 33 item Bulamia investigatory test to study the nature and prevalence of eating disorders in native Indian medical student population. The prevalence pattern and nature of eating disorder are discussed in details in the paper.

F : 90 STUDY OF ELECTROLYTES IN MENOPAUSAL WOMEN

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Menopause is associated with changes in endocrinal status of body. This will produce change in levels of hormones. Sex hormones and other steroidal hormones will also produce redistribution of electrolytes in extracellular intracellular compartments. In the present study the serum electrolyte levels including serum Na, K, Mg, Ca, PO_4 was measured in women of age group 40-45 years, having menopausal symptoms. Various significant re'ations of these electrolytes will be discussed in detail.

F : 91 COMPARATIVE STUDY OF ANTIOXIDANT POTENTIAL OF BLACK TEA (TEA WITHOUT MILK) AND WHITE TEA (TEA WITH MILK)

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Several biochemical and biophysical reactions in human body results in the formation of oxy free radicals, which are injurious to health. The disbalance between prooxidant and antioxidant is responsible for pathophysiology of many of the disease example cancer, myocardial infarction and more recently diabetes. Use of external oxidants may help in prevention of these diseases to some extent.

Tea contains polyphenols. These polyphenols have a strong antioxidant activity. With this background knowledge, we have tested the antioxidant potential of black tea (tea without milk) in comparison with white tea (tea with milk). We have taken the anti oxidant enzymes superoxide dismutase (SOD) as a parameter of antioxidant potential and lipid peroxidation (MDA) as a parameter for production of free radical.

In the present work we have taken three groups for study, control (without tea), black tea and white tea groups. The superoxide dismutase and free radical production was measured in samples obtained from different groups after overnight fast. One sample were taken before intake of test and two samples at 30 and 60 minutes after intake of tea.

The result shows that there was significant increase in plasma S.O.D. (5.24±0.68) and significant decrease in lipid peroxidation (2.20±0.18) half an hour after intake of black tea and no significant change were found after ingestion of white tea. These values tend to normalize with increase in time.

F : 92 IMMUNOELECTROPHORETIC ANALYSIS OF PLASMODIUM KNOWLESI SCHIZONT INFECTED ERYTHROCYTES

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Malaria parasites are having a complex mixture of antigenic components having both common or cross reactive as well as stage, species and strain specific antigens. *Plasmodium knowlesi* (a simian malaria parasite) has been used by several workers as a model for *P. falciparum* (a human parasite) for seroepidemiological studies as well as for antigenic characterization. In the present study extracts of *Plasmodium knowlesi* schizont infected erythrocyte was analysed by SDS polyacrylamide gel electrophoresis immunoelectrophoresis and crossed immunoelectrophoresis. The SDS polyacrylamide gel electrophoresis analysis revealed 30-35 major protein bands in molecular weight range of 15-230 KD. The antigenic analysis by immunoelectrophoresis and crossed immunoelectrophoresis and crossed immunoelectrophoresis revealed the presence of 34 parasite specific antigen in *P. knowlesi* schizont infected erythrocyte. The information obtained from the present study may be regarded as baseline and may further be explored to isolate and purify the target antigens of *P. knowlesi* schizont infected erythrocytes and testing their potential of protective immunity in monkey model and efficacy in immunodiagnosis of human malaria.

F : 93 PHYSIOLOGY OF AGING KIDNEYS - IMPLICATIONS FOR CLINICIANS

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There is increasing need for health care with advancing age, as a result of increased proportion of elder person in most societies and their higher susceptibility to disease, its complications and therapy related adverse effects. Better understanding of physiological changes in aging kidney has much to contribute in the better health care of these geriatric patients.

Cross sectional studies have consistently shown and age related decline in GFR after age of 30-40 years without any change in mean S. creatinine concentration. This fact should be kept in mind when determining the GFR or modifying the dosage of drugs cleared by kidneys.

A decrease in concentrating ability with age has been well documented. The extrarenal mechanisms responsible for maintaining volume and composition of extracellular fluid also become impaired making them more prone to develop volume depletion, hyponatremia and hyperkalemia. The decrease in blood pH and HCO_3 following an ingestion of acid load persist longer. This limitation of the kidneys predisposes to the development of and delayed recovery from metabolic acidosis.

Appreciation of these physiological changes can prevent many of the avoidable complications and lead to better outcome of morbidities unique to this age group.

F : 94 EFFECTS OF CHRONIC EXPOSURE TO HAND TOOL VIBRATION ON PERIPHERAL VASCULAR RESPONSES

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The physiological parameters like heart rate, blood pressure, hand blood flow, hand grip force and cold pressure responses were recorded from a group of 20 industrial workers occupationally exposed to hand tool

vibration for 5 to 10 years. These parameters were also recorded from 10 non-exposed control subjects under similar environmental conditions. In order to establish the cause of changes in the physiological parameters the vibratory acceleration from the tools were measured and analyzed.

The results indicated significant increase in the blood pressure and reduced hand grip force and hand blood flow in vibration exposed group as compared to controls. The index finger temperature recorded for the evaluation of peripheral vascular changes by immersing the hand upto the wrist in a cold water bath maintained at 4±0.2°C at room temperature of 27±1°C shwod a fall in finger temperature. This was indicative of high degree of vasoconstruction in all the exposed subjects. However, this was more pronounced in 30% of the subjects and persisted through out the immersion period of 30 min. The repeated vasoconstriction/vasodilation cycle observed in non-exposed subjects was not seen in exposed ones. The altered cold pressure responses could be due to some changes in the mechanical compliance as a result of repeated exposure to hand tool vibration. The changes were suggestive of the development of vibration induced white finger syndrome.

F : 95 SKILL PERFORMANCE IN RELATION TO PHYSICAL AND MOTOR FITNESS OF VOLLEYBALL PLAYERS OF PUNJAB

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The study has been conducted to know whether any correlation exists between skill performance, physical fitness and motor fitness parameters. Research data have been collected on 130 male national and international volleyball players belonging to different educational and other institutions of Punjab which are known for their excellence in the game of Volley ball viz., Shivalik Public School, Mohali, Govt. Sen. Sec. School Amargarh, Govt. Sen. Sec. Sports School, Jalandhar, Punjab Armed Police Jalandhar (PAP), Border Security Force (BSF), Punjabi Univesity, Patiala, Guru Nanak Dev University, Amritsar. For physical fitness body weight, body height, endurance and cardiovascular endurance for motor fitness - power, agility and speed parameters were studied, whereas, for skill performance - under hand pass, upper hand pass, service test, smash test and wall - volley test were applied. In skill performance, physicla fitness and motor fitness parameters, the PAP players have been found to be the best among all institution players, while, among school level players the sports school Jalanadhar have been observed to be the best. It has been observed that the players with better physical and motor fitness performed better in skill performance.

F : 96 BIOCHEMICAL PARAMETERS AS MARKER OF ORGAN FUNCTIONS IN REGULATORY TOXICITY STUDIES

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Biochemical parameters are used as markers for different organ function in regulatory toxicity studies of new drugs in experimental laboratory animals like rat, rabbit, guinea-pig, and monkeys etc. For last 25 years, several biochemical parameters have been tested in above animals. Baseline data are for the comparison of drug treated animals. The physiological limits of the data will be discussed in the conference.

F : 97 ROLE OF CEREBELLUM AND BRAINSTEM IN AUDIOVESTIBULAR PHYSIOLOGY

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The cerebellum receives directly vestibulocerebellar fibres from the sensory neuroepithelium of ampullary cristae which end in nodulus, the adjoining ventral part of the uvula, the flocculus, and the ventral paraflocculus, and a few fibres end in the lingula and dentate nucleus. The brainstem in turn constitutes cochlear nucleus, superior olivary nucleus latera lamniscus, inferior colliculus, and medial geniculate body as a part of auditory pathways.

The cerebellum exerts an inhibitory control over the vestibulospinal reflex pathways, mediated by the lateral vestibular nucleus and over the reflex vestibular pathway towards the primary afferents, through the medial vestibular nucleus. The direct cerebellooculomotor fibres originate in the dentate nucleus and project to the third nerve nucleus.

Our observations are based upon detailed audiovestibular evaluation of patients with brainstem/cerebellar pathologies as well as experiment conducted over the cat.

F : 98 EFFECT OF GUANETHIDINE PRETREATMENT OF SPINAL AUTONOMIC LOCI ON THE CARDIOVASCULAR EFFECTS OF INTRATHECALLY INJECTED OPIOIDERGIC AGONISTS IN CHLORALOSE ANAESTHETIZED CATS

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The opioid receptors of the spinal cord involved in cardiovascular regulation have been well characterized. I is still not clear whether the inhibition of cardiovascular functions is mediated by pre or post synaptic opioidergic receptors. In the present study we have investigated the effect of adrenergic neuron blockade on the cardiovascular effects of intrathecally administered morphine, ketamine and pentazocine. Intrathecal injection of morphine, pentazocine and ketamine induced dose related and naloxone antagonizable bradycardia and hypotension. Intrathecal injection of guanethidine (500 μg) induced fall in blood pressure (BP) and heart rate (HR). In animals where the effect of guanethidine was fully manifested, the effect of intrathecal injection of opioidergic agonists was completely blocked. It is therefore, concluded that the inhibitory opioid receptors (μ and γ) through which these agonists induce hypotension and bradycardia are probably located presynaptically on the facilitatory catecholaminergic neurons impinging upon the sympathetic preganglionic neurons.

F : 99 ANTIARRHYTHMIC ACTIVITY OF VERAPAMIL AGAINST ACONITINE INDUCED CENTROGENIC ARRHYTHMIA

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Centrogenic cardiac arrhythmia was induced by intracisternal injection (i.c.) injection of 50 μg and 100 μg doses of aconitine. In these doses aconitine induced 50-57% arrhytmia in pentobarbitone anaesthetized till 15 min., subsequently the cats developed ventricular fibrillation and died. This dose was taken as the arrhythmogenic dose to asses the effect of calcium channel blockers, both on cardiac arrhythmia and mortality. In the protection experiments, different doses of verapamil (25, 50 and 100 μg) were given i.c. 15 min. before the injection of aconitine (100 mg, arrhythmogenic challenge). It is interesting to point out that prior treatment of medullary cardiovascular loci with verapamil delayed the development of arrhythmia in 25 μg dose, both delayed and suppressed in 50 μg dose and completely blocked in 100 μg dose. In addition, all the 3 doses prevented the development of fibrillation and mortlality. In another set of experiments, arrhythmia was induced with the same arrhythmogenic dose (100 μg, i.c.) and verapamil 300 μg/kg was given by i.v. route. In these experiments systemically administered verapamil was found to inhibit the incidence of arrhythmia but could not abort it. However, both the development of ventricular fibrillation and mortality was also prevented by verapamil.

F : 100 A CLINICAL EVALUATION OF PROIMMU - A HERBAL PREPARATION IN TUBERCULOSIS

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Immunity plays a vital role in the fight against diseases caused by infections. In some chronic inections like tuberculosis antibiotics and other anti-tubercular drugs alone are not able to promptly and completely cure it due to poor immunity. The herbs described in Ayurveda (Ancient Indian Medical Sciences, AIMS) are being reported to enhance the immunity of the person. In the present study, therefore a polyherbal preparation PROIMMU was investigated for its clinical evaluation in patients of tuberculosis. The drug was given 1 Cap. thrice daily for fifteen to ninety days. The results showed that the preparation was having no adverse effect in the patients and it is quite tolerable and safe for human use.

F : 101 ACETYLCHOLINE STIMULATES Na^+, K^+ -ATPase ACTIVITY IN SARCOLEMMAL VESICLES AND ^{86}Rb-INFLUX IN STRIPS OF GUINEA PIG ATRIA AND VENTRICLE

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Acetylcoline (Ach) is generally believed to incerase K^+ conductance following muscarinic receptor activation in heart cells leading to hyperpolarization. In addition to the views that ACh acts on the muscarinic receptor activated K^+ channels and L-type Ca^{2+} channels, suggestions have also been made that it affects the myocardial Na^+, K^+-ATPase activity. Possibility of action of Ach on cardiac Na^+, K^+ - ATPase was studied by observing its effects on Na^+, K^+-ATPase activity and ^{86}Rb (K^+) influx in sarcolemmal (SL) vesicles and myocardial strips (AT-atrial; VT-ventricular) respectively. ACh (0.1 µM to 1 mM) caused stimulation of ouabin (Ou) sensitive Na^+, K^+ - ATPase activity in atrial (A) and ventricular (V) SL vesicles and ^{86}Rb-influx in AT and VT. The stimulation was more prominent in atrial preparations than in ventricular ones. The inhibitory effects of Ou (0.5-1 mM) on Na^+, K^+ -ATPase activity and ^{86}Rb-influx were significantly alterd by ACh. When Ou and ACh were present together the prevention of inhibition by ACh was more prominent than in the preparations pretreated with Ou. In Ou pretreated ASL and VSL ACh failed to alter the inhibitory effects of Ou. Ou inhibition of ^{86}Rb-influx in VT was feebly altered by ACh. Atropine (1µM) partially prevented the stimulatory effects of ACh on Na^+, K^+ - ATPase activity and ^{86}Rb-influx in AT. Atropine also reduced the ACh stimulation of Na^+, K^+-ATPase activity but had no effect on ^{86}Rb-influx in VT. It is suggested that ACh stimulates the Na^+, K^+ -ATPase activity largely by muscarinic receptor activation in atrial and also in ventricular cells of g.pig. This effect is likely to be due to increase in K^+ concentration "immediately outside the membrane" as suggested by others.

F : 102 NEURAL TISSUE TRANSPLANTATION

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Brain was considered to develop {only once" during the pre and early post natal life of any organism. The brain is therefore, not as plastic as liver or the peripheral nervous system. However, recently the plasticity in brain has been identified which has led to an increase in the scope of neural tisue grafting at the lesion site. The technique has offered a new lease of hope for many brain lesions specifically the neurodegenerative disorders. Transplantation addresses to two issues: replacement of neurons and presentation of a favourable microenvironment for neural growth. Replacing neuron requires distinct cell survival, process out growth, neuronal excitability and ultimately synaptic connectivity. In assessing recovery of function after Central Nervous System injury it is critical to establish what functions are lost, what have recovered, what is their sequence at recovery and how long it is sustained besides the comparative evaluation of the recoverd functions. Current approaches in neurotransplantation include implantation of primary tissues or cells, cell lines or biodegradable polymer encapsulated cells. Neuronal integration of the implant with the host brain begins within 48 hours of implantation and is extensively established well before the restoration of function typically observed. It is also reported that the astrocytes grafted tissue cultures are more dependent on the target implantation site than on the donar organ. Lateral hypothalamic lesion effects are irreversible and usually fatal. The recovery of functions is evident within and 36 hours and the survival probability is remarkably increased. While some of the ventromedial nucleus functins are partially restored some are totally restored. However, the recovery process is gradual.