LETTER TO THE EDITOR

GLYCINE TRANSFORT IN RESERPINIZED RAT BRAIN *IN VITRO*

Sir,

Reserpine, the principal alkaloid of the plant *Rawolfia serpentina* is used as an important drug against hypertension (5). Prolonged administration of reserpine to animals depletes amines from the brain (1). Studies with synaptosomal preparations have shown that reserpine inhibits the uptake of various neurotransmitter amines (2). However, it is uncertain how reserpine inhibits the uptake of amines by the storage granules (8). We have already shown that chronic administration of reserpine results in increase in K^+ contents of rat brain without concomitant change in the Na^+ content (7). This led us to suggest that reserpine may act on amine uptake by increasing the neuronal contents of K^+ as K^+ can compete with Na^+ for the Na^+ dependent uptake of amines.

In view of the role of amino acids in neurotransmission in the central nervous system (9) and the fact that these amino acid neurotransmitters as well as amine neurotransmitters are primarily inactivated by the uptake mechanism from the nerve endings (9), we have investigated the effect of reserpine on the uptake of amino acid glycine by the cerebral cortex. Glycine was selected because : firstly it is metabolised poorly in brain and secondly it is known to be inhibitory neurotransmitter in the spinal cord (3).

For *in vitro* experiments, rats were given 2 *mg/kg* body weight of reserpine (Ciba) or saline intraperitoneally for 5 days after which the experiments were performed. For preparation of cerebral cortex slices, animals were decapitated and brains quickly removed and kept in an ice cold dish. Rat brain slices were prepared using Stadie-Riggs slicer, as described (6,4), and two dorsal and two lateral slices were prepared from one brain. One pair of slices weighing about 70 *mg* were incubated in Warburg's apparatus using O_2 as gaseous phase in KR phosphate medium as described earlier (6,4). At the end of the incubation period (60 min) the slices were taken out and wiped with filter paper to remove adhering fluid. They were weighed and homogenized in 5% TCA and supernatant was taken for the determination of radioactivity by a Bhabha Atomic Research Centre gas flow counter. All the chemicals used were of A.R. grade. Reserpine was a gift from Ciba of India, and C^{14} glycine was purchased from B.A.R.C., Bombay.

The results of these experiments are shown in Table I. Results were expressed as *μmoles/g* of wet wt. of glycine taken up as this gives better indication of the uptake against a concentration gradient. 0.5 μCi of glycine was added at start of the incubation. Volume of incubation fluid

was 3 *ml* and concentration of glycine was 1 mM. Incubations were carried out for one hour values given are mean values ± standard deviations. Number of animals are given in parentheses.

TABLE I: Effect of chronic reserpine administration on glycine uptake by cerebral cortex slices from rat.

Treatment	*Wt. of animals at start of expt. in g*	*Wt. of animals at end of expt. in g*	*Glycine uptake µmoles/g fresh wt*	*% change*
Control (5)	150±0.0	149±12.4	10.07±0.39	100
Reserpine, 2 *mg/kg* for 5 days (5)	154±18.2	108±11.5	7.61±0.91	75.75

Our results show that uptake of glycine is significantly reduced in reserpinized animals ($P<.005$). This change in amino acid uptake presumably results due to changes in the neuronal membrane permeability, thus affecting the transport of substances across the cell membrane. These results and our previous findings (7) suggests that *in vitro* reserpine may behave like local anesthetic in altering the membrane permeability which appears to be the primary action of reserpine on isolated cerebral tissue. As a result of this, there may be consequent change in the movement of various physiologically important substances across the cell membrane causing modulation of physiological functions. Similar mechanism of action *in vivo* appears to be involved in the action of reserpine. We could not carry out experiments with spinal cord due to small size of the tissue for preparation of slices but it should be noted that glycine is an inhibitory neurotransmitter in the spinal cord.

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BOOK REVIEW

A TEXT BOOK OF ANIMAL PHYSIOLOGY, GENERAL AND COMPARATIVE PHYSIOLOGY & BIOCHEMISTRY WRITTEN BY P. C. HURKAT, Ph.D., *Reader, Department of Physiology and Biochemistry, J.L.N. Medical College, Ajmer and* P. N. MATHUR, *D. C. retired Principal & Professor of Zoology, Government College, Ajmer* has 603 pages of text divided into 23 chapters. This book is a useful reference book for studies at graduate level namely B.Sc., B.V.Sc., M.Sc. and also for students preparing for competitive examinations where a broad coverage of fundemental facts in Physiology and Biochemistry are required. The book has been written in an easy language to understand and is very well illustrated. Every chapter is followed by a list of adequate and relevant references which are very useful. The information though not very detailed, is uptodate and adequate.

On the whole this book is a good comparative Physiology Book with adequate and authenticated information available at relatively low cost.

USHA NAYAR

NEWS

SUJOY B. ROY MEMORIAL FUND

You would have come to know by now of the sudden and sad demise of Prof. Sujoy B. Roy, Head of the Department of Cardiology at A.I.I.M.S., New Delhi. His death has removed from our midst not only a great son of India, but also an outstanding cardiologist, a humanist and one of the renowned research workers whose work and worth have been acknowledged nationally as well as internationally. He leaves behind a vast amount of goodwill among his colleagues, students and his patients, to whom he was always a devoted doctor. To commemorate his memory in a befitting manner, it is proposed to raise a Memorial Fund in his honour.

The Faculty of the All-India Institute of Medical Sciences has decided that a fund called the "SUJOY B. ROY MEMORIAL FUND" be created in his memory and the proceeds therefrom be utilized for furthering those interests which were so dear to his heart. The fund will be utilized for the promotion of patient care, facilities in cardio-vascular diseases, for financial support specially to the young scientists for carrying out research in cardio-vascular diseases, for promotion of exchange visits at individual and university levels and for the award of travelling fellowships, etc. You will appreciate that this requires generation of a large amount of finances, the proceeds of which should be sufficient to serve a worthwhile purpose.

I know that you have admired the qualities of the head, heart and hand of our dear departed friend Sujoy during his life time. May I appeal to you now to make a generous personal contribution to the fund and request others also to do so. The cheques towards this donation may kindly be drawn in the name of "Director, AIIMS, New Delhi", which shall be entitled to income-tax exemption under Section 80 (g) of the Income Tax Act 1961. A certificate to this effect will be provided alongwith the receipt for the donation by the Institute.

N. H. KESWANI

Dean & Director, A.I.I.M.S., New Delhi-110016

MEDICAL COUNCIL OF INDIA — DR. B.C. ROY NATIONAL AWARD FUND

The Management Committee of Dr. B. C. Roy National Award Fund under the auspices of the Medical Council of India, Temple Lane, Kotla Road, New Delhi, has sanctioned a grant of Rs. 50,000/- to the Nutrition Rehabilitation Centre, Govt. Erskine Hospital, Madurai, for the purchase of a Mini-Bus to be named after "Dr. B. C. Roy".

The objectives of the programme launched by the Nutrition Rehabilitation Centre since 1971 under the direction of Dr. S. A. Kabir, former Dean of the Madurai Medical College, are to correct the Nutritional status of the under-five children with locally available food at cheap cost, with no involvement of costly animal proteins, to reduce the morbidity and thereby the mortality rates, to educate the mother and the village people about the growth of the children, to control various common diseases, to train various categories of staff of Applied Nutrition Programme of the Govt. of Tamil Nadu and care of expectant and lactating mothers.

The Centre has prepared films, slides, guide books, wall-posters etc. for educating the public on care of children, immunisation of diseases and treatment of common diseases.

The Govt. of Tamil Nadu have recognised this as an Apex Training Institute in Applied Nutrition Programme. The centre has also trained various categories of staff. The UNICEF, CARE and WHO have visited the Centre and they consider the Nutrition Rehabilitation Centre and Village Child Care Centres have the ideal projects for the health care of the children of our country. The Centre is also motivating Family Planning and is desirous of expanding its activities and for this purpose a Mini-Bus has been donated to the Centre by the Dr. B. C. Roy National Award Fund.

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

DR. RUSTOM DARASHNA ASANA ENDOWMENT PRIZE FOR RESEARCH ON PLANT PHYSIOLOGY, PLANT BREEDING SOIL CHEMISTRY/PHYSICS, AGRICULTURAL PHYSICS AGRONOMY AND AGRICULTURAL ENGINEERING BREEDING ON IMPROVEMENT OF KNOWLEDGE OR PRACTICE OF DRY LAND AGRICULTURE FOR 1974-1977.

Nomination are invited for the Dr. Rustom Darashna Asana Endowment Prizes for Original Research for the Triennium 1974-1977 carrying an amount of Rs. 2000/- in cash, kind or both, a citation and a certificate.

The last date for receiving the nominations for the award is 31.10.1976. Proposals (in quadruplicate) should be sent in sealed cover marked 'Confidential' to the Additional Secretary (Admn.), Indian Council of Agricultural Research, Krishi Bhavan, New Delhi-110001.

XXVII INTERNATIONAL CONGRESS OF PHYSIOLOGICAL SCIENCES

The **International Union of Physiological Sciences** and the **French National Committee of Physiological Sciences** have the honour to request your participation in the XXVII International Congress of Physiological Sciences to be held in Paris from July 18-23, 1977.

For further details, please contact :

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