

LETTER TO THE EDITOR

SEASONAL VARIATION IN TASTE THRESHOLD FOR SALT IN HUMAN SUBJECTS

Sir,

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An important aspect of acclimatization to high environmental temperature involves maintenance of sodium balance in the face of excessive cutaneous losses. Chief adjustment is made by aldosterone-induced decrease in the sodium concentration in the urine and sweat (9). Moreover, in view of the paramount importance of sodium equilibrium in the normal body function, an innate behaviour pattern promoting increased salt intake can also be expected (4). Denton (4) proposed that changes in taste threshold for sodium chloride may provide such a mechanism.

We have reported a significant decrease in urinary sodium excretion during summer in the human subjects of this region (7). The present study was conducted to observe whether any seasonal variation in taste threshold for sodium chloride also occurs.

Taste threshold (recognition threshold) for sodium chloride was determined in 50 male medical students aged 20-22 years. The investigation was repeated every month in the same subjects for one year. No dietary restriction was imposed but the subject abstained from food and smoking for one hour prior to the investigation. The procedure was carried out in an airconditioned laboratory between 8-10 a.m. 300 μ m of sodium chloride (AR) dissolved in 1 L distilled water was used to make serial dilutions of 1 : 1000 to 20 : 1000 equivalent to sodium chloride concentration of 6 mmol/L to 120 mmol/L (10). Taste threshold was determined by the method of Dasgupta and Abrol (3). Reproducibility of the test was verified by repeating it on 3 consecuting days in 7 students selected randomly every month from the 50 students. The test solutions were kept at 25-27°C and small aliquots were taken out each day for the test.

Taste threshold (recognition threshold) for sodium chloride ranged from 24 mmol/L to 78 mmol/L. Results of monthwise analysis of the taste threshold and environmental temperature and humidity are shown in Fig. 1. Mean taste threshold rose from 38.04 ± 6.8 /mmol/L in January to 66.00 ± 7.9 /mmol/L in June and then declined. The correla-

tion of taste threshold with environmental temperature ($r+0.94$, $P0.001$) and humidity ($r-0.75$, $p0.01$) was highly significant.

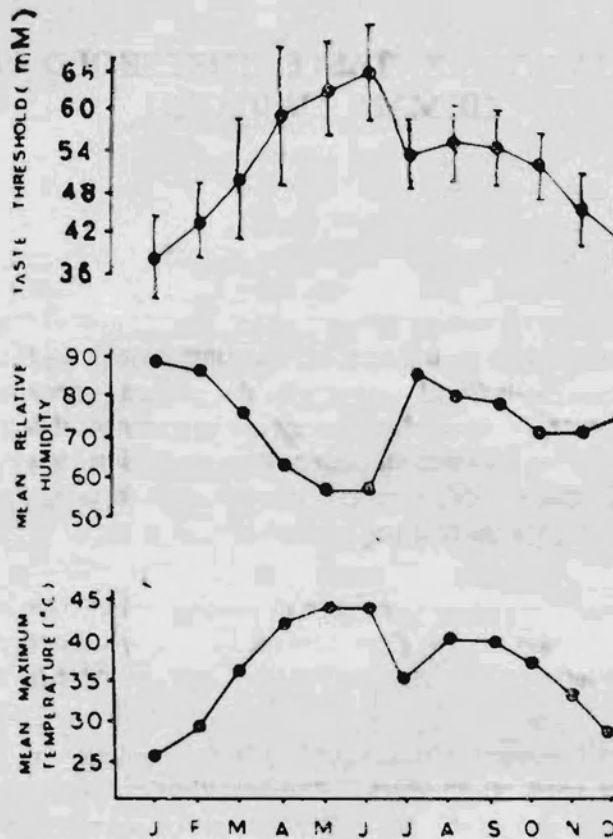


Fig. 1 : Relation between taste threshold for salt (Mean \pm SD) and the environmental temperature and humidity in different months of the year.

Taste threshold values of our subjects were within the normal range of recognition threshold for sodium chloride reported by different workers (8). More interesting was the close correlation of the taste threshold with environmental temperature and humidity. The cause of increased taste threshold for salt in summer is not exactly clear. An earlier view (4) that aldosterone-induced decrease in the sodium concentration of saliva may increase the taste threshold was not substantiated. In fact decreased salivary sodium concentration was found to lower the threshold rather than elevate it (1). Changes in taste threshold for salt observed by us could possibly be related to the seasonal variation in adrenal cortical activity since, in man as well as animals the urinary 17 oxysteroid and 17-hydroxy-corticosteroid levels have been reported to be lower in summer than in winter.

(2) and adrenal cortical insufficiency is known to produce many-fold increase in recognition threshold for sodium chloride (5).

Henkin *et al.* (6) have reported a group of patients with idiopathic hypogeusia showing elevated recognition threshold for sodium chloride. These patients reported that, to obtain the usually preferred salty taste in their food, they added excessive amount of salt at table. Similarly, elevated recognition threshold for sodium chloride during hot weather may increase the dietary intake of sodium chloride and thereby partly compensate for heavier losses in the sweat.

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BOOK REVIEW

RESPIRATION AND METABOLISM OF EMBRYONIC VERTEBRATES. Editor: Roger S. Seymour. Price DFL 250/U. S. \$95.00/£63.50. Publication date 3.12.84. Publisher: Dr W. Junk Publishers, Dordrecht/Boston/Lancaster.

This book is Vol. 3 in the series "Perspective in Vertebrates Science"- Series Editor - Eugene K. Balon. It contains papers submitted in Satellite Symposium of XXIX International Congress of Physiological Sciences, Sydney, Australia, 1983 organised by Rogers S. Seymour, Department of Zoology, University of Adelaide. The book contains 443 pages consisting of 26 original papers and stimulating preface. Whole sections of book are devoted to every major class of vertebrates and include extensive reviews balanced by original presentation of upto-date information. In brief the papers focus three vital aspects of the development of vertebrate embryo i.e. mechanism of respiratory gas exchange, water retention and energetics of growth during incubation.

The volume is unique in that it is the first to examine embryonic physiology in a broadly comparative way. It provides indication of current knowledge in the field as well as a most useful reference guide to the literature now available.

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