insensitivity to histamine[10,11]. Histamine exists in the brain in a typical subcellular distribution[12,13].

Therefore, the possibility should be considered that experimental catatonia induced with pharmacological agents possessing the 4-methoxyphenylethylamine moiety, and the catatonic state often observed in human schizophrenics, could be at least in part related to a disturbance of histamine catabolism in the brain.

Zusammenfassung. Anhand zweier Versuchsanordnungen wird gezeigt, dass Meskalin Histaminwirkungen verstärken kann. Ausserdem vermag es die Histamin zerstörende Wirkung der Diaminooxydase zu hemmen (in 10^{-5}-molarer Konzentration).

Es wird die Möglichkeit diskutiert, dass diese Eigenschaften mit der 4-Methoxyphenyl-äthylamin-Struktur des Meskalins in Zusammenhang stehen könnten.

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Testicular Degeneration after *l*-Tyrosine Feeding in Rats, Role of Ascorbic Acid

Toxicity due to high level of tyrosine feeding in rats has been observed by many investigators[1,2]. Hueper and Martin[3] have noted epithelial atrophy and formation of giant spermatid cells in testes during tyrosine toxicosis. Spermatogenic arrest has been observed in ascorbic acid deficient animals[4]. Ghosh and Guha[5] have recently reported inhibition of ascorbic acid biosynthesis in rats fed a high dose of tyrosine. Administration of vitamin C has been found to correct the defective metabolism of tyrosine in infants fed a high protein diet[6]. In the present investigation, the role of ascorbic acid on the testicular degeneration in rats maintained on a high dietary intake of *l*-tyrosine is presented.

Sixteen healthy male rats weighing 65 to 70 g were selected for the experiment. They were offered a standard laboratory diet for a few days prior to experimentation. All the rats then received a diet containing 5% each of *l*-tyrosine and sucrose along with their basal diet for 5 weeks. The animals were then divided into two groups of equal number. Eight in the experimental and the remaining rats in the control group. The experimental group of tyrosine-fed animals were treated with ascorbic acid by the intramuscular route at a dose level of 1 g/kg body weight per animal per day for one week, and the control group received tyrosine only as in the preceding weeks. All the animals were sacrificed by cerebral concussion after six weeks of treatment. Testes of the animals were carefully removed and fixed in carnoy. Paraffin sections were stained with hematoxylin and eosin for histological study.

Histologically, a marked atrophy of the testes has been observed in the rats fed a high dose of tyrosine. The lamina propria (Tunica albuginia) of the testes was found

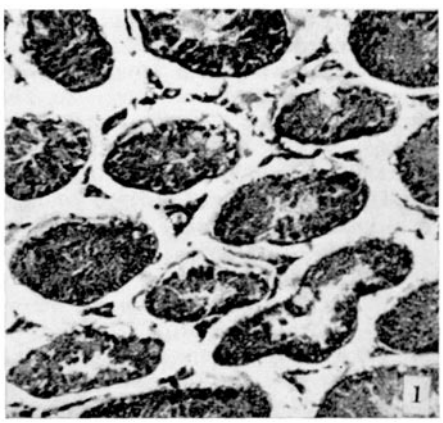

Fig. 1. Testis from *l*-tyrosine-fed rat, showing complete inhibition of spermatogenesis (× 96).

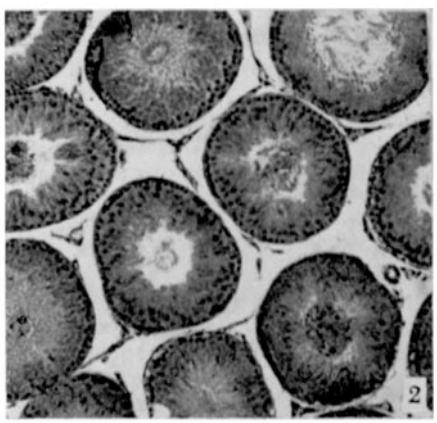

Fig. 2. Testis from *l*-tyrosine-fed rat treated with ascorbic acid. Normal spermatogenesis can be noted. Compare with Figure 1 (× 96).

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to be tortuous. Absence of mature sperm and the reduction of spermatogenesis was evident in almost all the tubules. But testes of the tyrosine-fed rats treated with ascorbic acid in addition, showed normal process of spermatogenesis again.

The role of ascorbic acid on testicular activity is not clear. Many investigators[7,8] could not detect any change in testicular ascorbic acid when the organ was stimulated by gonadotropins. On the other hand, testicular degeneration has been noted in ascorbic acid deficiency[9,10]. GHOSH and GUHA[5] have previously reported a disturbance in ascorbic acid biosynthesis in rats on a high dietary intake of tyrosine. Testicular atrophy, as observed under similar conditions in the present experiment, might be due to lowered ascorbic acid status of the animals. It has also been reported that administration of ascorbic acid corrects the histochemical abnormalities of scorbutic testes[11]. DEB and CHATTERJEE[12] have observed that the same vitamin corrects testicular degeneration in alloxan diabetic rats. In the present study also, normal spermatogenic process appeared again on administration of ascorbic acid in the degenerated testes due to tyrosine feeding.

The mechanism of the above changes is not very definitely understood. SELYE[13], NOWELL[14] and VELARDO[15] have all observed that excessive ACTH release inhibited gonadotropin production from the anterior pituitary. DEB and BISWAS (unpublished) have recently noted hypertrophy of the adrenal gland together with a fall in sudanophilic lipids in the organ in rats fed a high dose of tyrosine, which was again corrected by ascorbic acid treatment. It might be possible that the role of high tyrosine level on male reproductive organ is mediated through its inhibitory effect on hypophysical gonadotrophic hormone release[16].

Résumé. La dégénération des testicules des rats nourris d'une dose toxique de «tyrosine» a été évitée par le traitement à l'acide ascorbique.

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Effect of Glucose Administration on Release of Prothrombin from Rat Liver Microsomes during Incubation

The function of vitamin K in the synthesis of prothrombin by the liver remains obscure. In a recent review, JOHNSON[1] concluded that vitamin K probably does not stimulate prothrombin formation from free amino acids, but may participate in the finalization of prothrombin from a precursor molecule, possibly through some role of the vitamin in electron transport. GOSWAMI and MUNRO[2] observed that microsomes prepared from rat liver and incubated in Krebs-Ringer solution show an increase in prothrombin activity. From the conditions of incubation, they concluded that this did not represent de novo protein formation but must have arisen from finalization of prothrombin. HILL, GAETANI and JOHNSON[3] confirmed that more prothrombin activity appears during incubation of microsomes, but concluded that this phenomenon is due to release of preformed prothrombin from the microsomes into the suspending medium. We now wish to report an experiment which suggests that the microsome may not play a purely passive role during incubation, since the rate of appearance of prothrombin activity can be influenced by pre-feeding of glucose to the donor animal.

Rat livers were homogenized in 10 Vol of 0.25 *M* sucrose and the heavy microsome fraction previously[2] found to generate prothrombin during incubation was isolated by removing the cell debris, mitochondria and nuclei by spinning for 10 min at 6500 *g*, followed by isolation of the heavy microsomes by centrifugation for 1 h at 18,000 *g*. This fraction was then resuspended in the same volume of sucrose as that used for homogenization. 2 ml of this suspension were incubated with 2 ml Krebs-Ringer bicarbonate buffer, pH 6.9, modified by omission of $CaCl_2$ which would interfere with prothrombin assay. The gas phase during incubation was 95% oxygen/5% CO_2. Samples were taken at intervals up to 3 h of incubation at 37° and assayed for prothrombin content by the ALLINGTON[4] modification of the one-stage procedure, which also measures the amount of factor VII present in the system. The results are expressed in units giving the prothrombin activity as a percentage of the prothrombin contained in a standard sample of rat plasma. The pro ein content of the microsome preparations was estimated by the LOWRY procedure[5].

Rats were fasted overnight and then received 3 g glucose orally. They were killed 2 h after feeding; control animals were kept fasting throughout. Liver from both

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