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は1, 18hrで増加し, c GMPは2 hrまでは著明に減じ, 18hrでも回復しない。従って c AMP / c GMPは2~18hrで増加する。寒冷ストレス負荷による脳内及び副腎髄質のTH活性の変動はc AMPの影響下にあると考えられる。TH活性の殆んど認められない副腎皮質のc AMP, c GMPの前述の変化については今後ステロイド分泌機構との関連を追求したい。

### **Studies on Monoamine Oxidase (IV) : Monoamine Oxidase Activity in Rat Brain and Estrous Cycle**

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〔第51回日本薬理学会総会 仙台(1978年3月)で発表〕

The activity of monoamine oxidase (MAO) during different phases of the estrous cycle was studied using seven brain regions from S.D. strain rats. The rats were maintained on a 12 hr light-dark schedule. MAO activity of homogenate of each tissue was assayed by isotope dilution method using  $^{14}\text{C}$ -tyramine as substrate. In most regions of the brain, MAO activity was highest in proestrus (P), subsequently fell in estrus I (EI), rose again in estrus II (EII), and turned to a lower level during diestrus. Especially in the hypothalamus, MAO activity in P showed highly a significant difference ( $p < 0.01$ ) from that in diestrus. MAO activity in the hypothalamus of rats 2 weeks after ovariectomy was lower than that in P phase of nonoperated rats. When estradiol (0.2mg/kg/day for 3 days) was given s.c. to ovariectomized rats, MAO activity in the hypothalamus was depressed significantly, whereas progesterone (4mg/kg/day for 3 days) showed tendency toward restration of the activity depressed to the level in P. Estradiol together with progesterone also inhibited the activity to the same extent as the former alone. Plasma levels of estrogens were considered to be highest in P. The peak of the activity appeared almost simultaneously with the so-called critical period. Thus, no direct relationship between the fluctuation of MAO activity in the hypothalamus and different levels of endogenous steroids is recognized.

### **Fluctuation in the Levels of Cyclic AMP and Cyclic GMP in Rat Brain during Estrous Cycle**

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〔第51回日本薬理学会総会 仙台(1978年3月)で発表〕

In connection with the effects of sexual steroids, fluctuations in the levels of the

cyclic nucleotides in rat brain during the estrous cycle were studied using seven brain regions obtained from S. D. strain rats maintained on a 12 hr light-dark schedule. The estrous cycle was classified into the 5 phases proposed by Nakao and Takeichi (Tokyo Jikeikai Ikadaigaku Zasshi; 71 : 396, 1955). The contents of cyclic AMP and cyclic GMP were assayed by the RIA method. In all regions of the brain except the hypothalamus, the levels of cAMP were highest in estrus II (E II), subsequently decreased in diestrus I (D I) and diestrus II (D II), rose again in proestrus (P), and reverted to minimum levels during estrus I (E I). In the hypothalamus, the level of cAMP rose, earlier on, in D II and gradually fell to the lowest level in E I with no elevation in P. The pattern of cGMP was similar to that of cAMP in 5 regions of brain except cerebellum and hypothalamus, where each peak was observed in P and D II, respectively. Estradiol (0.2mg/kg, i.p.) significantly increased cAMP levels in the hypothalamus, striatum and midbrain, and cGMP in the hypothalamus and hippocampus. In another regions, an increasing tendency was observed, whereas progesterone (4mg/kg, i.p.) did not result in significant effects in either cyclic nucleotide except for an increase in cGMP levels in the cerebellum.

### 子宮内膜中の Monoamine Oxidase 活性および Cyclic AMP, Cyclic GMP の Estrous Cycle による変動

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〔日本薬学会 第98年会 (1978年4月) で発表〕

〔目的〕我々は脳内, 副腎中の monoamine oxidase (MAO), tyrosine hydroxylase など catecholamine 関連酵素の変動について検討してきた。今回は正常ラットの子宮内膜の MAO 活性と, catecholamine と関連の深い cyclic AMP (cAMP), cyclic GMP (cGMP) 含量の性周期による変動について検討した。

〔方法〕温度 $22 \pm 2^{\circ}\text{C}$ , 湿度55%の空調室で2週間以上飼育した10週令前後の S. D. 系雌性ラット (体重約200g) を用いた。Smear を1日2回 (8, 20時) 観察し, 性周期は中尾, 武市による分類法に準じて Diestrus I (DI, 間期第1日目, EII から12時間後), Diestrus II (DII, DI より24~36時間後), Proestrus (P, 有核細胞のみ), Estrus I (EI, 有核細胞と角化細胞がほぼ1:1), Estrus II (EII, 角化細胞のみ) の5期に分け, 正常の性周期を示すラットのみを使用した。MAO 活性の測定は断頭後直ちに子宮を摘出採取した内膜の 0.1M Tris-HCl buffer homogenate を酵素材料として  $^{14}\text{C}$ -tyramine を基質に用いる大塚, 小林の方法を改変した放射化学法によって行った。cAMP, cGMP は断頭後摘出した子宮に microwave を照射して内在酵素の活性を停止させ, 内膜の生理食塩水homogenateのTCA抽出物を材料としてRIA法で測定した。

〔結果・考察〕子宮内膜中の MAO 活性はP期に最も高く, D期に低いという性周期に伴う変動がみられた。cGMPの変動はMAO活性と同様のパターンを示したが, cAMPはP期には比較