

preliminary report¹. Their chemical data are in very close agreement with ours.

Both the behavioral and neurochemical effects of L-Dopa seem to mimic what might occur if first amphetamine and then DA were administered to chicks with sufficient intervening time for recovery. Amphetamine

Changes in concentrations* of chick whole brain biogenic amines following administration of L-Dopa (100 mg/kg)

Amine estimated	Concentration (µg/g of brain)	Change (%)	N
Adrenaline	0.213 (0.195)	+ 9.2	16
Noradrenaline	0.543 (0.478)	+ 13.6	16
Dopamine	6.244 (0.529) ^b	+1177.0	16
5-Hydroxytryptamine	0.887 (1.012) ^c	- 14.1	16
Histamine	0.559 (0.498)	+ 12.2	16

* Control values in parenthesis. ^b $P < 0.001$. ^c $P < 0.01$ - Analysis of variance.

which produces excitement and hyperactivity causes a significant decrease of brain 5-HT only (SEIFTER and HANIG, in preparation) whereas DA administration causes catatonia and akinesia with a significant elevation of DA only in the brain¹⁻³. JOUVET and others¹⁵⁻¹⁸ have suggested that diminution of brain 5-HT may play a primary role in arousal mechanisms, whereas HORNYKIEWICZ and others¹⁹⁻²² have demonstrated the role of basal ganglia DA in control of muscle tonus. Our present report is consistent with these findings²³.

Zusammenfassung. Nachweis, dass bei Küken die i.v. Injektion von L-Dopa (100 mg/kg) eine sofortige Überaktivität herbeiführt. Nach 10 min wurde im Gehirn eine Verminderung des Serotoningehaltes (14%) und eine Erhöhung des Dopamingehaltes (12fach) festgestellt, während Adrenalin, Noradrenalin und Histamin unverändert blieben.

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²³ The author (JPH) was supported in part by a National Science Foundation Predoctoral Traineeship.

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Hyperlipidic Diet as a Factor Allowing α -Naphthyl-Isothiocyanate and Thioacetamide Toxicity on the Albino Rat Testis

Alpha-naphthyl-isothiocyanate (ANI)^{1,2} and thioacetamide (TAA)³⁻⁵ induce a proliferation of the small biliary ducts in rat liver. Similar changes have been observed in the liver of rats treated with DL-ethionine^{6,7}. This substance has been reported to produce hepatic lesions as well as structural changes of the germinative epithelium of the testis^{8,9}. Therefore the effect of ANI and TAA on the testis was studied in rats fed either a balanced or a hyperlipidic diet.

Material and method. Five groups of 10 male albino rats (body weight: 150-160 g) were used. Group 1 and 2 were fed a balanced diet containing ANI (0.5 g/kg of food) and TAA (0.6 g/kg of food) respectively. Group 3 and 4 were given a hyperlipid diet containing ANI or TAA at the same doses as above. Group 5 was fed the hyperlipidic diet without any addition. The overall experimental period was 26 days.

Results and discussion. No microscopical lesions were observed in the testis of rats fed both the balanced diet containing ANI or TAA and the hyperlipidic diet. On the contrary, remarkable changes occurred in the testis of the rats given the hyperlipidic diet containing ANI (Figure 1) or TAA (Figures 2 and 3). Such changes consisted in a marked decrease in the volume of several seminiferous tubules and in an almost complete disappearance of their germinative cells, which had progressively undergone vacuolar degeneration, nuclear pyknosis, caryolysis, caryorrhexis and necrosis.

At first these pathological changes affected spermatozoa, then spermatids and spermatocytes and finally spermatogonia. In the degenerate tubules several multinucleate cells containing from 2 to 6 large nuclei, closely resembling those of degenerating primary spermatocytes, were observed. After 26 days of treatment, the damaged

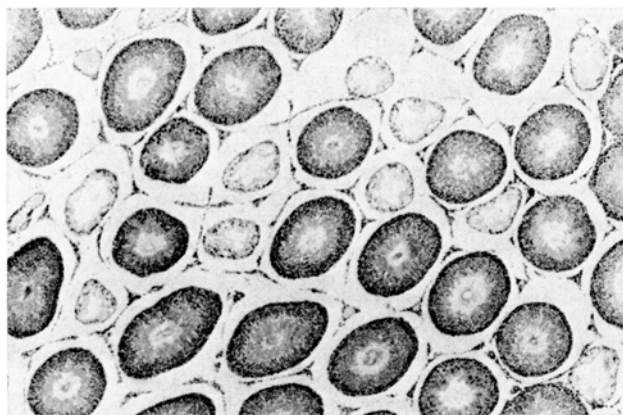


Fig. 1. Rat testis after 26 days of treatment with hyperlipidic diet + ANI. Some seminiferous tubules are markedly decreased in size, which contain few or no germinative cells. $\times 176$.

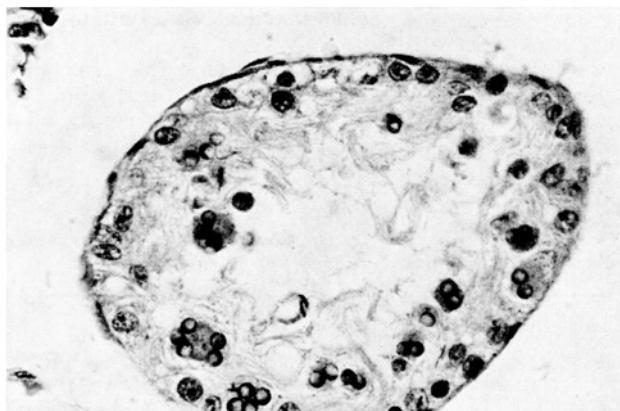


Fig. 3. Rat testis after 26 days of treatment with hyperlipidic diet + TAA. Damaged seminiferous tubule. Pathological changes are evident in the residual germinative epithelium. Some characteristic multinucleate cells can be seen. $\times 1760$.

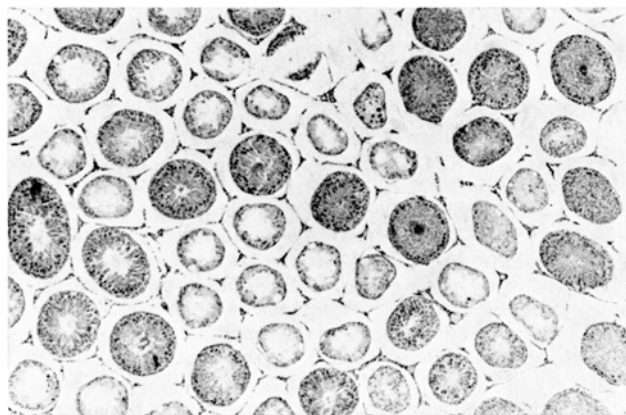


Fig. 2. Rat testis after 26 days of treatment with hyperlipidic diet + TAA. Involved tubules containing necrotic material, few normal or degenerating spermatogonia and normal Sertoli cells. $\times 176$.

tubules were remarkably decreased in size and contained degenerate cells, multinucleate masses sloughing in the lumina and, next the limiting membrane, a few degenerating spermatogonia. Sertoli as well as Leydig cells appeared to be normal.

It seems, therefore, that the hyperlipidic diet is a factor in allowing the toxic effect of ANI and TAA, since these substances are ineffective when fed together with an equilibrate diet.

It may be supposed that the testis lesions observed under our experimental conditions are due to cell biochemical changes, which possibly involve protein synthesis, as reported for ethionine intoxication.

As far as the finding of almost completely degenerate tubules near normal ones is concerned, it has to be remembered that like features have been described during treatment with substances electively and greatly toxic for the testis. Therefore, such behaviour could be related to the rhythmic and alternate function of the various portions of the organ.

On the basis of the results obtained, from a wider point of view it can be pointed out that toxic substances may be ineffective when present in a balanced diet, whereas their toxicity may appear and be greatly increased when they are added to a non-equilibrate diet.

Riassunto. L' α -naftil-isotiocianato e la tioacetamide somministrati al ratto albino con una dieta equilibrata non inducono nessuna alterazione significativa a livello dei testicoli. Tuttavia, quando vengono associati ad una dieta iperlipidica, causano notevoli lesioni a carico dell'epitelio germinale.

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New Mitochondrial Inclusion Revealed by Negative Staining

Numerous mitochondrial inclusions have been described in a wide variety of mitochondria in thin sections of normal and pathological cells examined in the electron microscope. The inclusions, which occur most commonly in the mitochondrial matrix compartment, have been classified on the basis of structure as either granular, crystalline or fibrous^{1,2}.

The inclusion described here has been observed in mitochondria obtained from developmental stages of the blowfly *Calliphora erythrocephala*. Most of the observations were confined to mitochondria in larval and early pupal fat bodies, but the inclusions have also been seen in mitochondria in the eggs.