

phorylation(9), sodium azide provides an interesting metabolic tool to investigate the pathogenesis of hypertension along biochemical lines.

Summary. 1. A comparison was made between the effects of sodium azide in both normotensive and hypertensive patients. Doses of 0.65-1.3 mg, administered orally, had a rapid hypotensive effect which persisted from 10-15 minutes. When given chronically to hypertensives (0.6-1.3 mg 3 to 4 times daily for periods up to 2 years), sodium azide produced a sustained lowering of the blood pressure toward normotensive levels. Repeated administration of the drug results in a greater hypotensive effect following equivalent doses and/or a progressively more sustained period of normotensive blood pressure levels. The observations indicate that a significant difference exists in the relative sensitivity of hypertensive and normotensive individuals to the hypotensive effects of sodium azide. 2. Intravenous injection of the drug to animals subjected to hemorrhage had no dilating effects on the constricted blood vessels in the exter-

iorized mesentery. Sodium azide (0.5 mg/100 g body wt) lowers the blood pressure of hypertensive rats. The observation that sodium azide in hypertensives rarely lowers the elevated blood pressure below normotensive levels suggests a general non-specific action of the drug on all vascular beds.

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Effect of 17-Vinyltestosterone on the Mammae, Uteri, Thymus, and Adrenal Glands of Spayed Female Mice. (20771)

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17-vinyltestosterone appears to be an interesting steroid in that it shows evidence of androgenic activity (Kochakian(1), Leathem (2)) and also indications of corticoid activity (Lewis, de Majo & Rosenberg)(3) but did not support lactation in adrenalectomized rats in doses up to 2 mg daily (Flux)(9). It is closely related structurally to ethinyl testosterone (pregneninolene, anhydrohydroxy progesterone) which has progesterone-like, oestrogenic and androgenic activities (Emmens & Parkes(4), Chamorro(5-7)). Since androgens and at least one 11-deoxycorticosteroid, 11-deoxycorticosterone acetate (see review by Folley(8)), have been found to promote growth of the mammae in experimental animals, it was decided to investigate the effect of 17-

vinyltestosterone on the mammary glands of spayed mice, and in addition to collect data on its effects on body weight, uterus weight and on the weight of the thymus and adrenal glands.

Methods. Female mice of the CHI strain were ovariectomized at 14 days of age and weaned at 21 days. Mice in one group of 6 animals were each subcutaneously implanted with one 100 mg tablet of 17-vinyltestosterone, those in another group were each given four 50 mg tablets and 6 otherwise untreated ovariectomized mice and 6 intact mice were used as controls. The animals were killed at 42 days of age and the uteri and the thymus and adrenal glands were weighed. The uteri were split and blotted to remove any fluid in

the lumina. Whole mounts of all the mammary glands were prepared and the total area covered by each set of glands was determined by placing the slides in a projector and measuring the area covered by the image of the separate glands with a planimeter and summing for each mouse. To obtain an objective measure of the degree of branching of the duct systems the images of the first 2 pairs of thoracic glands were projected and the number of junctions between ducts counted. In the case of the larger and more complex duct systems the images were projected onto squared paper (one inch squares for larger and half inch for smaller glands) and the number of duct junctions in a quarter (with a minimum of eight) of the squares covered by the image were counted. These, together with the number of squares covered, made it possible to estimate the number of duct junctions per gland.

Results. The results are shown in Table I. The mice implanted with one 100 mg tablet vinyltestosterone absorbed an average of 0.88 mg per day and those given four 50 mg tablets absorbed almost twice as much, 1.61 mg daily. Although the mean body weights of the mice given vinyltestosterone were higher than those of the mice in the control groups the differences were not significant. At both dose levels vinyltestosterone caused an increase in the mean total area of the mammae over that of the ovariectomized control mice but neither approached that of the intact control mice. The number of duct junctions was increased in the treated mice and in those given the higher dose the mean number of duct junctions per unit area was considerably greater than in the other groups, including intact controls. No alveoli were seen on any of the duct systems. Vinyltestosterone caused considerable increases in the weight of the uteri, although the means did not reach that of the intact controls. It also caused a depression in thymus weight and in the case of the higher dose, in adrenal gland weight. In all cases the effect of the higher dose exceeded that of the lower.

Discussion. 17-vinyltestosterone was similar to the closely related compound ethinyl testosterone (pregneninolene) tested by Camorro(5-7) in that it promoted growth of the

TABLE I. The Effect of 17-Vinyltestosterone, Given from 21 to 42 Days of Age on Mammary Glands of Female Mice Spayed at 14 Days. (6 mice in each group.)

Treatment	Mean body wt (final), g	Total area—		Mammary gland		Mean uterus wt		Mean thymus wt, mg	Mean adrenal wt, mg
		mm ²	Log ₁₀ (mm ²)	—No. of duct junctions*—	Log ₁₀ (total)	mg	Log ₁₀ (mg)		
				Total	Per 10 mm ²				
Spayed controls	18.2	58	1.763	71	1.850	26.3	.954	62	7.0
Spayed + vinyltestosterone									
1 × 100 mg tablet (.88 ± .09 mg daily)	20.6	85	1.924	184	2.234	42.8	1.554	48	5.9
4 × 50 " (1.61 ± .09 " ")	20.0	194	2.282	695	2.826	73.6	1.768	36	5.3
Intact controls	17.6	599	2.764	1137	3.040	45.5	1.968	53	8.2
Min difference between means	No diff.		0.105		.522	10.4	.152	10.2	1.6
Significant at 5% level	Sig.		0.150		.743	14.7	.216	14.6	2.2
" " 1%									

* Counted: the 1st and 2nd pairs of thoracic mammary glands.

mammary duct systems of spayed female mice. Differences in numbers of duct junctions per unit area must be interpreted cautiously because, in the mammae of intact or oestrogen-treated spayed mice the density of duct junctions is not related in a simple manner to the area of the duct system (Flux)(9). However the number of duct junctions per unit area in the mammae of the mice treated with vinyltestosterone was much greater than in those of comparable sizes in either intact or oestrone treated spayed mice in other experiments (Flux)(9) and it appeared certain that vinyltestosterone stimulated the growth of side branches in the duct systems. As far as effects on the weight of the uteri, and thymus and adrenal glands of spayed mice were concerned the results of this experiment were in accordance with those of Kochakian(1) and Lewis *et al.*(3).

Summary. 17-vinyltestosterone promoted growth in the extent and in the degree of branching of the mammae of spayed female mice but did not cause growth of alveoli on the duct systems. It also caused increases in the weight of the uteri of spayed mice and

depressed the weights of the thymus and adrenal glands.

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Effect of Aureomycin in Preventing Liver Abscess in Cattle.* (20772)

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Liver abscesses result in the condemnation of about 5% of the livers from cattle slaughtered in Federally inspected meat packing plants in the United States. This loss amounts to more than \$2,000,000 annually. According to the National Livestock Loss Prevention Board(12), the regional incidence of abscesses, telangiectasis and "sawdust"[†] is highest in the western states. Jensen, *et al.*(8)

found that liver abscesses develop in significant numbers, both in the feed lot and on the range. Abscesses appear to develop 80 to 120 days after the cattle are placed in the feed lot. These investigators also observed that telangiectasis develops early and abscesses form later in the fattening period. The studies of Smith(14) indicate that there is a definite relationship between ulcers of the rumen and abscesses of the liver in beef cattle. A recent study by Jensen(9) shows a direct relationship between liver abscesses and stomach injuries. Newsom(13) and Yamamoto(15) in separate investigations found that the predominating organism in abscessed livers was *Actinomyces necrophorus*. Merchant(11)

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[†] A term used to designate a condition of liver characterized by many areas of focal necrosis spread throughout the liver or localized giving the appearance of sawdust on the liver.