

thiazole. It would also appear useful in the treatment of staphylococcal infections of the meninges inasmuch as sulfadiazine diffuses readily into the spinal fluid.

Conclusions. Sulfadiazine increases the bactericidal action of normal blood when added *in vitro* or when exhibited orally. Comparative tests show that sulfathiazole is somewhat superior to sulfadiazine in its effect on *Staphylococcus aureus*.

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Absorption and Metabolism of Estrogens. I. Estrogen Assay by Intrasplenic Injection.

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It has been stated that estrogens are metabolized by the liver of the rat and completely inactivated. The best evidence for this is the excellent work of Heller¹ on tissue slices incubated with various estrogens. Methods of indirect attack *in vivo* have consisted in attempting to study effects of endogenous or exogenous estrogens in animals in whom the liver had been poisoned.^{2, 3} There have also been attempts to recover estrogens by hashing the whole animal after injection.⁴ These have also led to the belief that estrogens are completely inactivated by the liver.

The present study of which this is a preliminary report was undertaken with the view of direct attack on this problem.

The estrogen in question was injected directly into the spleen in 0.05 cc of oil solution. The spleen was exposed through a mid-ventral incision and delivered to the outside; the site of entrance of the needle into the spleen was tied with an encircling silk ligature to prevent leakage of the oil. The injections were made into castrate females primed 14 days previously with 50 γ of estrone. Vaginal smears were taken with a moist, cotton tipped toothpick at 48, 60, and 72 hours after injection, and a fully cornified smear in any one or more of the three periods was considered as positive. These pro-

¹ Heller, C. G., *Endocrinology*, 1940, **26**, 619.

² Pineus, G., and Martin, D. W., *Endocrinology*, 1940, **27**, 838.

³ Talbot, N. A., *Endocrinology*, 1939, **25**, 601.

⁴ Zondek, B., and Sklow, J., *Proc. Soc. Exp. Biol. and Med.*, 1941, **46**, 276.

cedures were followed throughout except for a group of 10 animals on 100 γ of estrone, where it was necessary to use 0.1 cc of oil owing to the relative insolubility of the material.

The intrasplenic unit is defined as that amount of estrogen required to produce positive smears in 50% of at least 10 rats treated as described. On the basis of this standard procedure the intrasplenic unit of alpha-estradiol* has been 50 γ , estrone about 70 γ , estradiol benzoate 24 γ , and estradiol dipropionate 5 γ . This study is being continued on these estrogens as well as stilboestrol, estriol, estradiol benzoate-butyrate, and estrone benzoate under various conditions.

These preliminary results lead to the following possible conclusions: (1) A large proportion (about 98%) of intrasplenically injected free estrogen is destroyed either in the liver or spleen. (2) The point of attack on estradiol is probably at the hydroxyl groups since partial protection of this estrogen is afforded by covering one hydroxyl group and greater protection by covering both hydroxyl groups. (3) The esters of estradiol are at least partially absorbed from the spleen as esters since the esterification afforded protection from destruction.

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Ineffectiveness of Thiamin Hydrochloride in Treating Late Weaning Paralysis of Vitamin E Deficient Rats.

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It has recently been reported by Holmes and Pigott¹ that orally administered thiamin hydrochloride is effective in curing the neuromuscular disorder which appears during late lactation in the offspring of rats receiving a restricted intake of vitamin E. These observations were based upon 3 litters in which paralysis appeared between

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¹ Holmes, A. D., and Pigott, M. G., *Am. J. Physiol.*, 1941, **132**, 211.