

Organisms Injected	One-hour Cultures	5-hour Cultures	6-hour Cultures
	days	days	days
10,000	5.9	6.1	6.5
100,000	4.6	—	4.2

There seems no evidence of any appreciable difference in virulence in the early phases of the culture cycle.

### 8988 P

#### Endocrine Control of the Scrotum and a "Sexual Skin" in the Male Rat.

JAMES B. HAMILTON. (Introduced by H. E. Himwich.)

*From the Departments of Anatomy and Physiology, Albany Medical School.*

The "sexual skin" of the female is known to be under the control of estrogenic substances, particularly in primates. "Sexual skin" differentiation is much less clear cut in the male. The purpose of this preliminary article is to point out (1) that "sexual skin" exists in the male and is controlled by the male hormone, (2) that the development and maintenance of the scrotum is also dependent upon the male hormone.

In the adult male white rat the ventrocaudal portion of the scrotal sac is distinguished by its wrinkling and reddish-yellow color. This skin covers the region where a functional gubernacular ligament joins the caudal end of the epididymis to the cremasteric muscle. Proof of the endocrine control over this characteristically-pigmented and differentiated bit of skin and over the whole scrotal sac is adduced from the following:

(1) In 10 castrated and in 7 hypophysectomized adult male rats the "sexual skin" atrophied, the reddish-yellow hue faded, and in some cases a curled yellow layer sloughed off this region, exposing an underlying skin which was not grossly different from that of adjacent regions. The whole scrotum lost its pouch form and tended to resemble the condition in the female rat in that the skin of this region was bound rather closely around the pelvis and tail.

(2) Atrophy of specialized skin and atrophy of the scrotum as a whole are not a result of the removal of the mechanical weight and pressure of the testes. Replacement of the testes in 2 rats by paraffin pellets of weight, size and shape equivalent to the testes did not prevent post-castration atrophy. In one animal the scrotal skin became taut and cracked open over the "paraffin testis".

(3) Subcutaneous administration of testosterone acetate\* in sesame oil prevented the post-castration and post-hypophysectomy degeneration of the sexual skin and of the scrotum in 14 rats.

(4) Twenty immature rats injected for 19 days, beginning at the age of 14 days, developed scrota  $1\frac{1}{2}$ -3 times larger than those of uninjected litter-mates.

Investigations are now in progress testing (1) the amount of male hormone necessary for scrotal development and maintenance, (2) the comparison of cryptorchid and normal testes in producing scrotal growth, (3) the influence of the male hormone on the scrota of other animals besides the rat.

An endocrine control of the scrotum is of apparent significance in reproductive processes, in the treatment of sterility, cryptorchidism and other conditions. An undeveloped scrotum may prevent the proper descent of the testes. In the adult rat, hypophysectomy, with its resultant scrotal atrophy, causes return of the testes to an abdominal position.<sup>1</sup> Administration of the male hormone after hypophysectomy in the adult male rat results in at least temporary maintenance of the testes in the scrotum<sup>1</sup> and fecundity.<sup>2, 1</sup>

In view of these other<sup>1</sup> data it seems likely that the benefits obtained in cryptorchidism with luteinizing anterior pituitary-like substance<sup>3</sup> are due to the production of the male hormone. Several cases of cryptorchidism are now being treated with male hormone, but wide clinical use should be delayed until the effect of the potent testosterone acetate has been carefully evaluated, particularly with regard to a possible carcinogenic action upon the prostate. Such studies are now being made of the effect of testosterone acetate in rodents and in primates.

*Summary.* Development and maintenance of the scrotum and differentiation of a male "sexual skin" at the tip of the scrotum of rats is dependent upon the male hormone.

---

\* Furnished under the trade-name Perandren by the Ciba Company.

<sup>1</sup> Hamilton, J. B., and Leonard, S. L. To be published.

<sup>2</sup> Nelson, W. O., *Science*, 1936, **84**, 230.

<sup>3</sup> Werner, A., Kelling, D., Ellersieck, D., and Johns, G. A., *J. A. M. A.*, 1936, **106**, 1541.