# SOME REPRODUCTIVE ASPECTS OF MALE RABBITS



BY

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**APPROVAL SHEET**

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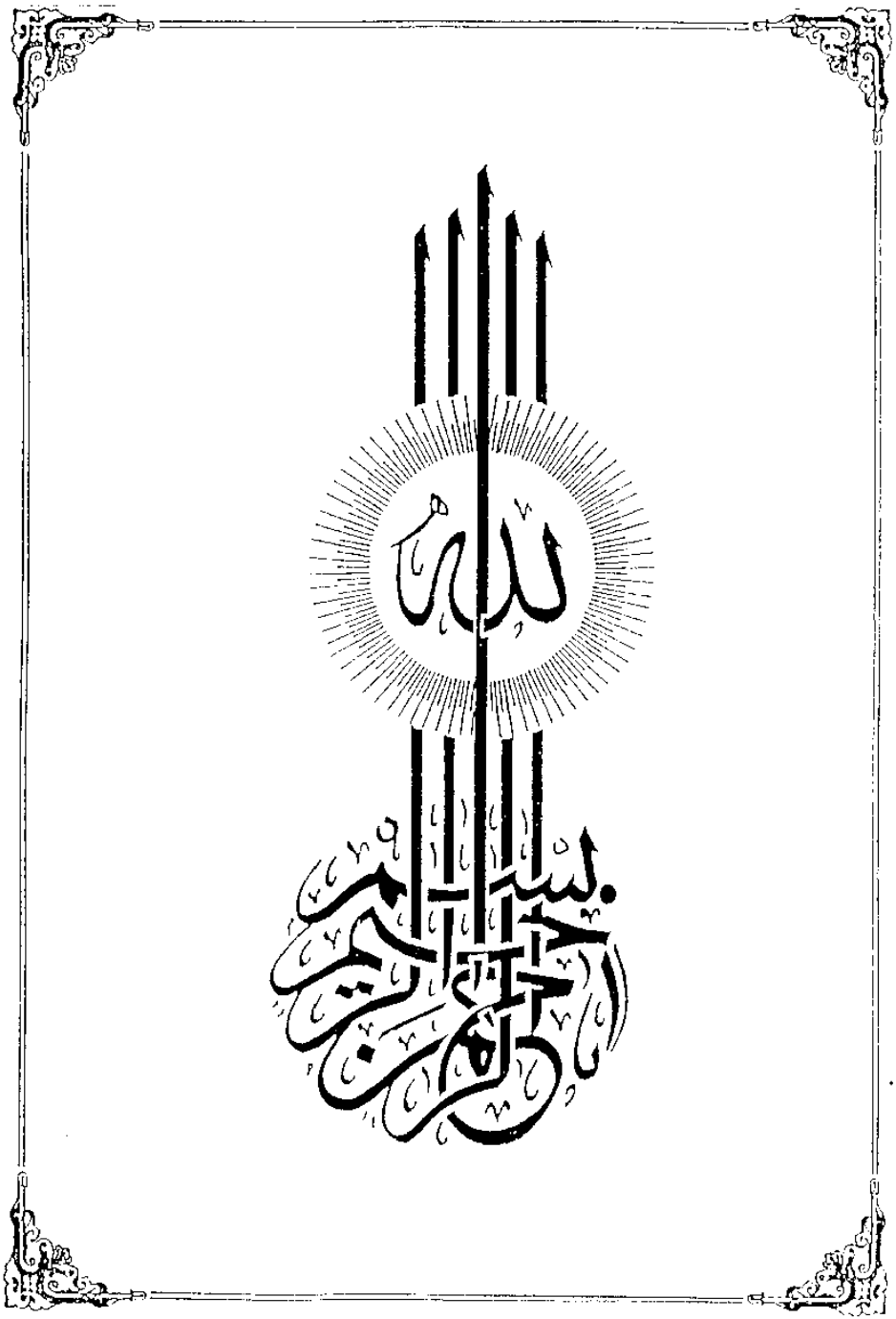

# "SOME REPRODUCTIVE ASPECTS OF MALE RABBITS"

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## ABSTRACT

The present study was designed to determine in vivo the effect of GnRH analogue (Buserelin acetate) on age at puberty, semen quality and fertility of immature and mature male New Zealand White (during summer). Another experiment was realized to analyze the putative effect of GnRH analogue on rabbit Leydig cell function.

The first part of the experiments (in Egypt) shows that GnRH analogue has positive effects on body weight and also on the weights of testis,

epididymis and accessory glands. Histological parameters were measured in both testis and epididymis of immature rabbits; they showed that the GnRH analogue treatment increased the relative volume and the diameter of seminiferous tubules, the average frequency of stages I and VIII of spermatogenesis, the number and diameter of both Sertoli cells and Leydig cells, the thickness of epididymal duct epithelium and the percentage of spermatozoa present in cauda epididymal duct, whereas a decreased of the relative volume of interstitial tissue was observed.

The ages at beginning of fighting, at separation of penis from sheath, at mounting and at first ejaculation for GnRH-treated male rabbits were earlier than in control animals.

All the parameters studied concerning seminal characteristics, fertility and plasma testosterone concentration were significantly higher for GnRH-treated animals compared with controls.

During summer the injection of 2 $\mu$g of Buserelin acetate 3 times weekly for two weeks, improved semen quality and fertility of New Zealand White rabbit bucks compared with control animals.

In the in vitro experiments realized in France, we showed the presence of two populations of Leydig cells after centrifugation on discontinuous Percoll gradients. These cells have been characterized by their capacities to produce testosterone (in absence but mainly in presence of LH/hCG), to show a positive staining for a specific Leydig cell enzyme, the 3ß-hydroxysteroid dehydrogenase; these cells have kept a high viability as appreciated with the Trypan blue method.

In a preliminary work we have studied the effect of the same analogue of GnRH (used in vivo) on the two populations of Leydig cells in immature rabbits, and demonstrated that GnRH analogue improved the production of testosterone both in basal and hCG-treated conditions, and that the Leydig cells

of each enriched populations respond differently. These last observations may be related to the in vivo data discussed above and suggest a possible role of GnRH on the Leydig cells in immature rabbit.

Whatever, all the reported results in the present work bring insights in the mechanism of action of the GnRH analogue (not only at the hypothalamo-hypophyseal-testicular level but may be also directly on the testicular interstitial tissue) in improving some reproductive aspects of male rabbit.

**Key Words :** Rabbit , GnRH, anatomy, histology, puberty, semen, fertility, testosterone, in-vivo, in-vitro, Leydig, reproduction.

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