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Exbrayat, J Clin Exp Endocrinol 2018, 2:1

The Endocrine Regulation of Caecilian Reproduction: A Poorly Known Aspect of Physiology

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Received date: Mar19, 2018; **Accepted date**: Mar 21, 2018; **Published date**: Mar 29, 2018

Editorial

The mechanisms of endocrine regulation of reproduction are currently well known in many vertebrate [1]. But some species are still poorly studied. Caecilian amphibians I have been studying for about 40 years, mainly from a rich collection of preserved animals, belong to these ones.

What are Caecilians still called Gymnophionans? They are burrowing or aquatic lengthened amphibians living in South and Central America, Africa, Asia [2]. Their reproductive biology is known in some species only. The fertilization of Caecilians is always internal. They are oviparous, direct developing or viviparous. Several works, sometimes published for a long time [3] described the anatomy and histology of male and female genital tracts. Sexual cycles have been reported, related to environmental factors such as seasons, temperature, or rain [4].

In oviparous species, males and females generally perform an annual breeding cycle [4]. In direct-developing species, males and females exhibit continuous cycles [5,6]. In viviparous species, pregnancy is 6 months to one year long, with a biennial cycle in females and an annual cycle in males.

The males and females genital tracts of a large number of species were described [7,8], but very few works have been devoted to the endocrine regulation of Caecilians reproduction. In males, Leydig cells were found between the seminiferous tubules. In Typhlonectes compressicauda, a South American viviparous species, our own studies have shown that Leydig cells reacting with anti-testosterone were more developed during the breeding season, which is also the rainy season, than during the period of quiescence at dry season [4]. In the females of several oviparous, direct-developing or viviparous species, some authors showed the evolution of ovarian follicles with the presence of corpora lutea [4,7]. In T. compressicauda, corpora lutea reacting positively with anti-progesterone persisted throughout the intrauterine development. The granulosa cells of ovarian follicles are equipped with enzymes implicated into the synthesis of steroids, and the presence of estrogenic hormones has been demonstrated with immunohistochemical method [4]. The lactotropic and gonadotropic cells developed at reproduction in males as well as females. The presence of PRL RNAs was demonstrated in the pituitary gland [9]. The presence of α and β estrogenic receptors was demonstrated in the ovaries of B. taitanus, a direct-developing species [10]. The presence of gene expression of prolactin receptors was shown in the genital tract of

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