Original Research Article

Testosterone, gonadotropins and androgen receptor during spermatogenesis of Biomphalaria alexandrina snails (Pulmonata: Basommatophora)

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Abstract

Endocrine regulation of reproductive processes of the snail Biomphalaria alexandrina is poorly recognized. Thus, the aims of the study were: (1) to acquire histological images of the ovotestis; (2) to determine the hemolymph concentrations of testosterone (T) and gonadotropic hormones (luteinizing hormone: LH and follicle stimulating hormone: FSH), (3) to demonstrate androgen receptor (AR) immunolocalization in the ovotestis, and (4) to show LH and FSH protein expression in cerebral ganglia of small (diameter shell: 4–6 mm), medium (7–11 mm) and large (12–16 mm) B. alexandrina snails. These three groups represented different reproductive stages of the snail. The AR immunoexpression was found in the periphery and inside the acini of small (immature) snails as well as in spermatocytes, spermatids, Sertoli cells, the interstitial cells and the acinus lining epithelium of medium (mature) snails. Low AR immunoexpression was demonstrated in the interstitial cells of large (aged) snails. The neurons at the periphery of the cerebral ganglia and connective sheath of the ganglia showed a positive FSH and LH immunostaining. T concentration in the hemolymph was higher in medium snails than in small and large snails. In contrast, LH concentration was higher in medium snails than in small and large snails. These data suggests that gonadotropins and T play a role in the gonadal development in B. alexandrina.

Keywords

Testosterone; LH; FSH; Gonad development; Androgen receptor