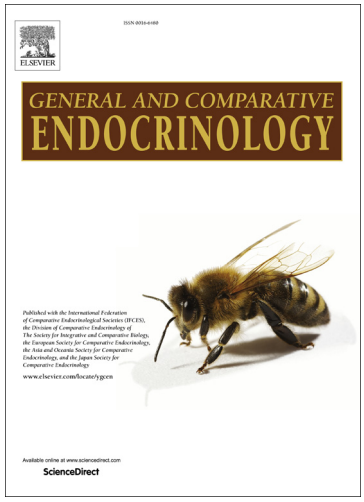

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Secretoneurin-A inhibits aromatase B (*cyp19a1b*) expression in female goldfish (*Carassius auratus*) radial glial cells

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Abstract

In the teleost brain, radial glial cells (RGCs) are the main macroglia and are stem-like progenitors that express key steroidogenic enzymes, including the estrogen-synthesizing enzyme, aromatase B (*cyp19a1b*). As a result, RGCs are integral to neurogenesis and neurosteroidogenesis, however little is known about the regulatory factors and signaling mechanisms that control these functions. A potential new role of the secretogranin II-derived neuropeptide secretoneurin A (SNa) in the control of goldfish (*Carassius auratus*) RGC function is the subject of this study. Immunohistochemistry revealed a close neuroanatomical relationship between RGCs and soma of SNa-immunoreactive magnocellular and parvocellular neurons in the preoptic nucleus of female goldfish. Five hours following intracerebroventricular injection of 0.2 ng/g SNa *cyp19a1b* mRNA levels were decreased by 86% ($P < 0.05$) in the hypothalamus and by 88% ($P < 0.05$) in the telencephalon. *In vitro*, 24 hour incubation with 500 nM SNa decreased *cyp19a1b* mRNA by 51% ($P < 0.05$) in cultured RGCs. These data provide evidence that SNa can regulate aromatase expression in goldfish RGCs. By regulating neuroestrogen production in SNa may therefore be implicated in the control of major estrogen-dependent functions of the preoptic region such as reproductive behavior and osmoregulation.

Key words: Radial glial cells, aromatase B, secretoneurin, preoptic nucleus, goldfish