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The functional relationships between the neurosecretory material and the adrenal gland of  
*Rana ridibunda* (Amphibia-Anura)

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**Abstract:** In this research, the structural changes that appear in the adrenal glands and neurosecretory cells of frogs (*Rana ridibunda*) which had been kept under different temperatures (+4°C, +10°C, +20°C) were studied with light microscope and the relation between these structures were discussed. The pericaryons of Gomori (+) neurons that form the preoptic nuclei had different sizes. These were big and small neurosecretory cells. The adrenal gland of *Rana ridibunda* had three types of cells, being corticosteroidogenic, catecholaminergic and Stilling cells. Although neurosecretory cells were observed to be generally active at all temperatures administered especially, small neurosecretory cells were vulnerable to temperature increases according to their sizes and became more active. In other words, the increase in temperature caused small neurosecretory cells to produce secretion and discharge. Temperature induced an increase in synthesis and secretion in corticosteroidogenic cells and Stilling cells of the adrenal gland. On the other hand, materials were stored distinctly in catecholaminergic cells, even if there was the production of secretion in those cells. As a result, there may be a functional similarity between the small neurosecretory cells and corticosteroidogenic cells of the adrenal gland. In addition, a functional similarity may also be observed between corticosteroidogenic cells and Stilling cells. Catecholaminergic cells may be effective in stimulating the secretion activities of both corticosteroidogenic and Stilling cells.

**Key Words:** Preoptic nucleus, Adrenal Gland, Corticosteroidogenic cells, Catecholaminergic cells, Stilling cells.

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