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THE GONODUCT, AN EXCLUSIVE STRUCTURE OF THE OVARY OF TELEOSTS. ITS STRUCTURE IN GOODEIDS AND POECILIIDS

*Campuzano-Caballero, J. C., G. De la Rosa-Cruz, A. García-Alarcón and M. C. Uribe

Laboratorio de Biología de la Reproducción Animal. Departamento de Biología Comparada. Facultad de Ciencias, Universidad Nacional Autónoma de México. D.F. México.

*Email: jccc@ciencias.unam.mx

ABSTRACT

The ovary of species of the families Goodeidae and Poeciliidae is of cystovarian type, and, as viviparous species, the embryogenesis occurs into the ovary (intraovarian gestation), unique in vertebrates. The gonoduct is the caudal part of the ovary, communicated to the exterior by the genital pore. Consequently, the gonoduct separates the germinal part of the ovary, where oogenesis and gestation occur, from the exterior. The gonoduct is characterized by the absence of germinal cells. This feature differentiates the morphology and physiology of the gonoduct from the rest of the ovary. In viviparous species, the gonoduct is involved in the internal fertilization, receiving the spermatozoa during insemination. Even this complex position of the gonoduct, it has been scarcely analyzed. The present study describes the gonoduct of three species of viviparous teleosts and compares them with the gonoduct of *Poecilia reticulata*, previously described. These species are: *Heterandria formosa* (Poeciliidae), *Xenotoca eiseni* and *Ilyodon whitei* (Goodeidae). The wall of the gonoduct is lined by: single cuboidal or columnar epithelium; loose connective tissue, with blood vessels, nerves, collagen fibers, fibroblasts, melanocytes and immunological system cells, as macrophages and lymphocytes, these cells may be included in melano-macrophage centers; smooth muscle and, peritoneum. Morphological characteristics of the gonoduct are observed: a) large and thin folds of the mucosa, forming a structure similar to a cervix, are seen in the cephalic region; b) thick evaginations of the gonoduct wall that reduce the lumen develop in the middle region; c) ventral invaginations, which form exocrine glands, are extended in the caudal region; d) other invaginations of the mucosa store spermatozoa; e) large and thin epithelial cells are seen near the spermatozoa; f) numerous macrophages are in the lumen around the spermatozoa; and g) the wall contains thick muscle fibers in circular arrangement. These features reveal especial roles of the gonoduct as: controlling the internal space of the duct and reducing the diameter of the lumen in defined places, establishing relationships with the spermatozoa, and immunological and secretory activities.