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Study of the Fine Structure of Zona Radiata in the Oocytes of Rainbow Trout (*Oncorhynchus mykiss*) from Initiation to Post-fertilization

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Abstract

In the present research work, origination and modification of the zona radiata (ZR) around the rainbow trout oocytes and in the zygotes were studied for every stage of ovarian growth and its relationship with the habitat and spawning location. In early to mid-December, premature ovaries were separated from the matured fishes. One week later, the mature oocytes and sperm were caught with the massaging and pressing of the fish abdominal area and some mature oocytes were fertilized. Study of the histologic sections demonstrated that the ZR is appeared as a non-striated, amorphous and acellular area outside the oolemma of the oocyte during cortical alveolar stage. The number of canals and structural complexity of ZR were culminated at the vitellogenic stage. In mature oocytes, ZR became bilayer (ZRi, ZRe) and its structural complexity was reduced. This reduction continued in after-fertilization oocytes (zygotes) that could show a change in its role from nutritional type to protectoral one. It was appeared that jelly layer (ZRe) of rainbow trout eggs was simpler and thinner when compared to other fish eggs. The results achieved was logical because of spawning behavior of trout which lays oocytes in dogged spawning pits, therefore there was not any need for adhesion of oocytes on spawning substratum in order of protection.

Keywords: *Zona radiata, Oocyte, Oncorhynchus mykiss, Protection.*