

Histology of the liver of bullfrog (*Lithobates castebianus*) tadpoles during the development and metamorphosis

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During metamorphosis tadpoles undergo morpho-physiological changes. Digestive system suffers transformation especially with the development of the stomach and the shortening of the intestine length. Liver is also a target of cytological and biochemical modifications caused by changes in the lifestyle, once that the aquatic omnivorous tadpole changes to a terrestrial carnivorous adult. The present work aimed to describe the liver and gall bladder histological changes of bullfrog (*Lithobates castebianus*) tadpoles during development and metamorphosis. Methods and results: Analyses were performed at the frog farming sector of the “*Centro de Aquicultura*” of UNESP-CAUNESP, “*Departamento de Morfologia e Fisiologia Animal*” and “*Departamento de Tecnologia*”, both of FCAV-UNESP. Tadpoles were organized by development stages according Gosner (1960). Liver and gall bladder samples were collected and fixed in Bouin and Karnovsky, for the processing and embedding in paraffin and historesin, respectively. Slides were stained with Hematoxilin-Eosin, Lysson Hematoxilin and Eosina and periodic acid-Schiff. Tadpole’s liver showed a parenchyma formed by polygonal cells with round and, most of the time, excentric nuclei which formed cell chains in concentric arrangement. This organ showed a capsule of connective tissue with distinct lobulations and a typical portal space. At stage 25, hepatocytes showed a row arrangement with cytoplasm full of glycogen and lipid vacuoles. The hepatic parenchyma showed sinusoids full of red and Kupffer cells at the adventitia layer. At stage 40, such parenchyma was observed with a more compact appearance and the hepatocytes formed concentric chains arrangements with high vascularization. From stage 42 to 45, there was a reduction in the number of lipid vacuoles in the hepatocytes and the frequent presence of melanomacrophages. Gall bladder did not show tissue restructuration remaining with the same features during the whole development. The main histological changes found in the liver parenchyma are related with the biochemical alterations that this organ suffers during metamorphosis. The reduction of the lipid vacuoles in the cytoplasm of the hepatocytes may be related with the use of the lipids as energetic source for the maintenance of the metabolism during metamorphosis.