Establishment and comparative analyses of different culture conditions of primary hepatocytes from Nile Tilapia (Oreochromis Niloticus) as a model to study stress induction in Vitro.

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Abstract

We established an in vitro hepatocyte primary culture system from Oreochromis niloticus, a tropical fish species of great economical importance, and evaluated its ability to express albumin, a liver-specific protein, consistently for a period of 3 wk. Serum requirements for fish hepatocyte cultures were assessed. A one-step in situ perfusion of tilapia liver retrogradely followed by collagenase liver dissociation and subsequent washing produced nearly 90% homogenous viable hepatocytes, as shown by trypan blue exclusion test. Mixed primary monolayer and aggregate hepatocyte cultures achieved by 10% fetal calf serum medium supplements expressed consistent levels of albumin. The results of light and electron microscopy showed that the hepatocytes did not significantly proliferate (P , 0.05) but remained viable for at least 3 wk. The results of this study show that in vitro cultures of mixed primary hepatocyte monolayers and aggregates established from Nile tilapia may be useful models for studying transient cellular stress induction.