

Abstract

Charles University, Faculty of Pharmacy in Hradec Králové

Department: Department of Biological and Medical Sciences

Study program: Laboratory diagnostics in healthcare

Author: Petra Přibáňová

Supervisor: RNDr. Ivana Němečková, Ph.D.

Title of the thesis: Morphological characteristics of steatosis development in precision cut liver slices and the possibility of its modification

Background and the aim of the thesis: Non-alcoholic hepatic steatosis is one of the most common causes of chronic liver disease. It is considered to be a manifestation of a metabolic syndrome associated with obesity, dyslipidaemia and type II diabetes mellitus. The aim of the bachelor thesis was to describe the anatomy and histology of the liver and hepatic steatosis, as well as to prepare histological slides, their subsequent staining and observation of the influence of different substances on the development of steatosis in liver tissue.

Methods: Mouse liver was used to prepare precision cut liver slices (PCLS). The slices were then fixed and incubated in different media. Paraffine slides stained with hematoxylin-eosin or oil red were observed under a microscope.

Results and conclusion: When comparing control PCLS without incubation with slices incubated for 36 hours in basic Williams' medium, we found that necrosis developed mainly in the center of the sections; therefore, it was not possible to reliably assess the effect of selected substances on the development of steatosis. We did not observe any difference between control PCLS that were incubated in basic medium and PCLS that were incubated in steatotic medium, even after the addition of potential anti-steatotic agents. In the future course of the experiment, it will be necessary to improve the incubation conditions of the PCLS to maintain the viability of these slices.

Keywords: liver, histology, steatosis, precision cut liver slices (PCLS)