

2022



International Conference

EUROPE, SCIENCE AND WE EVROPA, VEDA A MY EBPOΠA, HAYKA И МЫ





Publishing House "Education and Science" s.r.o.,

International Conference EUROPE, SCIENCE AND WE EVROPA, VĚDA A MY ЕВРОПА, НАУКА И МЫ

> 2022 Praha, Czech Republic Conference Proceedings

Publishing House "Education and Science" s.r.o.,

International Conference EUROPE, SCIENCE AND WE EVROPA, VĚDA A MY ЕВРОПА, НАУКА И МЫ

Science editor: Tomash Nejezchleb

ISBN 978-80-907845-8-1

DOI: http://doi.org/10.5281/zenodo.5074952 Conference Proceedings available at virtualconferences.press

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Detoxifying liver function in acute experimental pancreatitis

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Summary. This article presents the results of the study of detoxifying liver function in acute experimental pancreatitis. It has been established that when developing acute pancreatitis, pathological changes affect the liver, causing a violation of the detoxifying properties of hepatocytes.

Key words: acute pancreatitis, liver, detoxifying function, cytochrome R-450reductase, glutathione-S-transferase, glucose-6-phosphate dehydrogenase, alanine amylamine transferase, aspartaminotransferase.

Acute pancreatitis is a frequent cause of hospitalization and has a high incidence of about 34 cases per 100,000 people annually worldwide [1]. The study of detoxifying liver function in acute pancreatitis is an urgent problem of modern medicine.

Purpose of the study: to study indicators of detoxifying liver function in acute experimental pancreatitis.

Materials and research methods. The experiments were carried out on 60 sexually mature male spastic rats with an initial body mass of 120-140 g., contained in the standard feeding mode. The experiments were carried out in accordance with the «European Convention for the Protection of Vertebrate Animals, which are used for experiments and other scientific purposes» (Strasbourg, 1985). Acute experimental pancreatitis was induced in rats by P.S.Simovaryan [2]: local freezing of pancreatic surface by ethyl chloride.

Studies were conducted on the 7th and 10th day after the operation, determined the activity of glucose - 6 - the phosphate of dehydrogenase (g-6-f), cytochrome P450 - reductase, glutathione-S-transferase.

The activity of glucose - 6 - phosphate dehydrogenase (g-6-f), cytochrome P450 - reductase, glutathione-S-transferase in the serum was determined using immunosorbent analysis (ELISA) using the standard test systems of Elabscience, USA. This test is based on the method of quantitative solid phase immunoassay type «sandwich». The optical density was measured with the help of the

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HUMAREADERHS (Human, Germany) computerized immunotherapy analyzer at a wavelength of 450/620 nm. The content of the studied indicators was expressed in U/ml.

Results and their discussion. It is known that the microsomal monooxygenase system (MMS) is a complex of enzymes embedded in the membrane of the endoplasmic reticulum consisting of two electron transport chains. The most significant monooxygenase reactions are those involving cytochrome P450 (EC 1.14.14.1, non-specific monooxygenases) [3.4].

Further, to study changes in the detoxifying function of the liver during the development of acute experimental pancreatitis, we studied the enzymes I and II of biotransformation of xenobiotics (Fig.1)

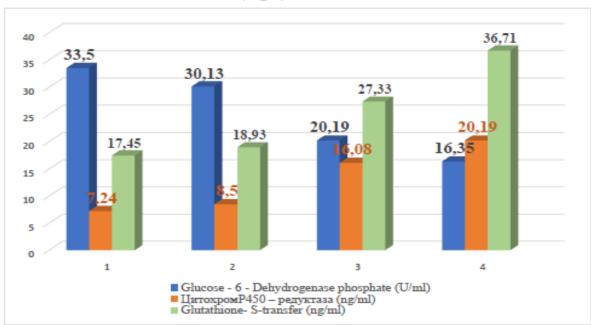


Fig 1. Changes in the detoxifying function of the liver in the development of acute experimental pancreatitis

According to the above diagram (Fig.1), in experimental animals, the activity of the enzymes involved in xenobiotic metabolism changes only slightly, which is not true for animals at 7 and 10 days after the operation, Glucose-6-phosphate dehydrogenase activity decreased by 1.66 and 2.05 times on 7 and 10 days of the experiment, respectively, compared to animals of the intact group. During the same

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study period, cytochrome P-450 activity increased by a factor of 2.22 and 2.8, while glutathione-S-transfer activity increased by a factor of 1.6 and 2.1, respectively, compared to animals of the intact group.

Given the above, we can conclude that as acute pancreatitis develops, pathological changes affect the liver, causing the detoxifying properties of hepatocytes.

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