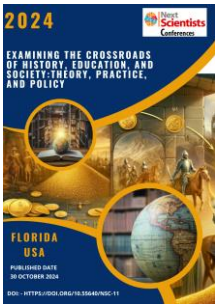


# THE EFFECT OF CERTAIN POLYPHENOLS IN TOXIC HEPATITIS

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## ABSTRACT
Due to the increasing influence of environmental factors and the increase in the number of industrial and chemical synthesis products, hepatoprotectors are becoming increasingly important, increasing the liver's resistance to the effects of chemicals and normalizing the functions of response to toxic stress.

**KEYWORDS:** Hepatitis, hepatotoxic, alanine aminotransferase, aspartate aminotransferase.

## INTRODUCTION
The liver plays a major role in every stage of metabolism and, together with other systems, is responsible for the adequate response of the body to external and internal changes. Today, despite the success achieved in the prevention and treatment of many diseases, the incidence and mortality rate of liver diseases shows a steady growth trend. Due to the increasing influence of environmental factors, the amount of industrial and chemical synthesis products is increasing, hepatoprotectors, which increase the resistance of the liver to the effects of chemicals and normalize the functions of response to toxic stress, are becoming more and more important [1-2]. Hepatotoxicants have different mechanisms of action, depending on which group they belong to. In general, their harmful effect consists of changing the membrane and enzyme apparatus of hepatocytes due to increased oxidation of lipids, as well as the accumulation of toxic metabolites - hepatotoxin biotransformation products. Therefore, in the case of toxic damage to the liver, first of all, antioxidant therapy is used, which limits the factors affecting the functional state of liver cell membranes and ensures their histological integrity [3-5].

**The purpose of the subject**: to study the activity of certain biochemical blood enzymes (alanine aminotransferase (ALT), aspartate aminotransferase (AST)) in toxic hepatitis

## METHODS
Tetrachloromethane ($CCl_4$) solution in 50% olive oil was induced by parenteral administration twice at a dose of 2 ml/kg in 1 day [17]. Medicines Slymarin (pharmacological sales name Karsil) 50 mg/kg, kversetin 10 mg/kg, glabra 10 mg/kg were administered orally within 7 days after hepatitis was induced in a dose of 10 mg/kg. Extraction of liver tissue homogenate We isolated 150-200 grams of rat liver tissue homogenate by differential centrifugation. The total protein, alkaline phosphatase, AST, ALT were determined by the Cypress Diagnostica (Belgium)

test kit to evaluate the hepatoprotective activity in the serum of experimental toxic hepatitis model rats treated with polyphenol compounds. Blood was collected from the animals, centrifuged at 3000 rpm for 12 minutes, serum was separated and biochemical indicators were studied. Alanine aminotransferase activity in serum was determined by the single Reitman-Frenkel method [6]. As a result of transamination under the influence of alanine aminotransferase (ALT) enzyme, amino acids are transferred from alanine to α-ketoglutarate. ALT activity is proportional to the amount of pyruvate dinitrophenylhydrazones formed in an alkaline environment and was determined colorometrically.

## RESULTS

Carbon tetrachloride (CCl4) is a small, lipophilic molecule that can easily pass through the lipid layer of the membrane and is metabolized in the liver. Its mechanism produces free radicals such as trichloromethyl (CCl3*) mediated by CYP450 for toxicity. (CCl3OO*) trichlormethylperoxyl these free radicals covalently bind to macromolecules and cause peroxidative degradation of membrane lipids rich in polyunsaturated fatty acids. The LPO process damages the membranes of liver cells, causes swelling and necrosis of hepatocysts, and results in the release of cytosolic enzymes such as alanine aminotransferase (ALT) and aspartate aminotransferase (AST) into the blood. The concentration of ALT in the serum of CCl4-induced experimentally toxic hepatitis animals increased by 158% compared with the serum of healthy animals. Animals treated with 50 mg/kg of slimarin reduced serum ALT by 36% ($p<0.05$) compared with carbon tetrachloride. The group treated with kversetin 10 mg/kg and glabra 10 mg/kg reduced the serum ALT by 34.4% and 23% ($p<0.05$), respectively, compared with the serum of toxic hepatitis animals. When comparing the effectiveness of polyphenolic compounds with the effect of the control drug, the activity of ALT did not differ significantly.

The concentration of AST in the blood serum of CCl4-induced experimental toxic hepatitis animals increased by 272.75% (*$p<0.05$) compared with the blood serum of healthy animals. The group treated with slymarin 50 mg/kg reduced serum AST by 65.6% ($p<0.05$) compared to carbon tetrachloride. The group treated with kversetin 10 mg/kg and glabra 10 mg/kg reduced AST in serum by 65% and 61.5% ($p<0.05$), respectively, compared with the serum of toxic hepatitis animals. When comparing the effectiveness of polyphenolic compounds with the effect of the control drug, the activity of AST did not differ significantly.

CCL4 easily passes through the membrane of liver cells, and its metabolites, which have the properties of a harmful toxin, affect the cell membrane in 8-12 hours, increasing its permeability. The normal functional state of the cell is disturbed, resulting in cell death due to hepatocellular necrosis. According to the location of AST, it is considered cytoplasmic and mitochondrial, and in the case of mitochondrial dysfunction, its release from the cell into the blood serum is higher than ALT. ALT enzyme is considered cytoplasmic, and its concentration in blood increases less than AST in liver pathologies. Studies have shown that AST increases in the heart, muscle, kidney, and nervous system at higher rates than ALT under stress conditions. For example, an increase in the amount of AST in ischemic myocarditis from heart diseases has been noted [7-10].

## CONCLUSION

The concentration of ALT, AST, alkaline phosphatase in the blood serum of animals with experimental toxic hepatitis created with tetrachloromethane under the influence of polyphenol compounds decreased, and the amount of total protein increased.

## REFERENCES

1. Ishankhodjaev T. et al. Study on Effects of Liposomal Quercetin on Biochemical Parameters of the Nigrostriatal System of Rats with Experimentally Induced Neurodegenerative Disease //Annals of the Romanian Society for Cell Biology. – 2021. – С. 6128-6143.
2. Mukhammadjon M. et al. The effect of ngf on indicators of the antioxidant system in rat brain tissue //Universum: химия и биология. – 2021. – №. 9 (87). – С. 82-86.
3. Saatov T. et al. Antioxidant and hypoglycemic effects of glabra //Endocrine Abstracts. – Bioscientifica, 2019. – Т. 63.
4. Saatov T. et al. Study on hypoglycemic effect of polyphenolic compounds isolated from the Euphorbia L. plants growing in uzbekistan //Endocrine Abstracts. – Bioscientifica, 2020. – Т. 70.
5. Saatov T. et al. Correction of oxidative stress in experimental diabetes mellitus by means of natural antioxidants //Endocrine Abstracts. – Bioscientifica, 2021. – Т. 73.
6. Irgasheva S. et al. Study on compositions of lipids in tissues of rats with alimentary obesity //Endocrine Abstracts. – Bioscientifica, 2019. – Т. 63.
7. Mamadalieva N. I., Mustafakulov M. A., Saatov T. S. The effect of nerve growth factor on indicators of the antioxidant system in rat brain tissue //eurasian union of scientists. series: medical, biological and chemical sciences Учредители: ООО" Логика+". – 2021. – №. 11. – С. 36-40.
8. Saatov T. et al. Study on antioxidant and hypoglycemic effects of natural polyphenols in the experimental diabetes model //Endocrine Abstracts. – Bioscientifica, 2018. – Т. 56.
9. Mustafakulov M. et al. Determination of antioxidant properties of l-cysteine in the liver of alloxan diabetes model rats //International Journal of Contemporary Scientific and Technical Research. – 2023. – №. Special Issue. – С. 47-54.
10. Мамадалиева Н. И., Мустафакулов М. А., Саатов Т. С. Влияние фактора нервного роста на показатели антиоксидантной системы в тканях мозга крысы //Environmental Science. – 2021. – Т. 723. – С. 022021.