ISSN 2181-3187

UDC: 611.36/ 616.36/ 612.359 + 615.91

SOME FEATURES OF TOXIC LIVER DAMAGE BY ACETIC ACID AND THE IMPLEMENTATION OF THE THERAPEUTIC EFFECT OF MILK THISTLE OIL.

Allayeva A.N

Bukhara State Medical Institute

Assistant at the Department of Anatomy and Clinical Anatomy (OSTA)

https://orcid.org/0009-0004-2661-5078

allayeva.aziza@bsmi.uz

Abstract: The article presents the results of experimental studies of metabolic disorders caused by subacute administration of vinegar to rats, and a study of the possibility of correcting the changes obtained with milk thistle oil based on changes in clinical and biochemical parameters in the blood: the level of transaminases (ALT and AST), creatinine , total protein, total cholesterol, glucose and triglycerides.

Key words: medicinal plant materials, milk thistle oil spotted , Silybum marianum (L.) Gaertn , hepatoprotective agent, biological experiment, clinical, biochemical studies.

The problem of correcting metabolic disorders in diseases caused by harmful and especially dangerous production factors is now very relevant. Medicines (ML) do not always give a successful result. Polypharmacy is often observed , which , along with taking ML, leads to side effects. In recent years, the use of natural healing factors, which have significant potential in terms of influencing the metabolism of patients with a variety of diseases, has attracted increasing attention of specialists to the problem of preventing and treating chemical injuries [22]. In this regard, medicinal plants are an important raw material base for the production of many drugs and have less pronounced side effects compared to their synthetic analogues. For the treatment of liver diseases (hepatitis, cirrhosis, toxic lesions), pancreas, spleen and other organs, such drugs as bonjigar , silibor , legalon , carsil , hepabene , made from the fruits of

ISSN 2181-3187

milk thistle Silybum, are widely used. marianum (L.) Gaertn . family Asteraceae [21,23].

The pharmacological action of milk thistle raw materials is due to its rich chemical composition, where the main pharmacological group is represented by flavonolignans (silybin , silydianin , silychristin , etc.), which improve metabolic processes in the liver, increasing its resistance to unfavorable conditions, enhancing the activity of the liver's enzymatic systems; accelerating the regeneration of liver cells [19, 21].

Milk thistle fruits are used as official medicinal raw materials for the production of hepatoprotective agents. spotted (Silybi mariani fructus). In medicine, the oil obtained from the seeds is also widely used, which is considered a classic hepatoprotector and is of certain scientific interest due to the presence of flavonoids , flavonolignans , chlorophyll, carotenoids , tocopherols, a complex of fatty polyunsaturated acids, which determine its therapeutic and prophylactic effect [18, 21].

The aim of this work was to study the direction of metabolic changes that form when modeling subacute toxic liver damage with vinegar in animals, and their correction with milk thistle oil obtained from the fruits of Silybum marianum (L.) Gaertn . family Asteraceae [20].

Wistar rats weighing 180-240 g, kept in a general viviparous regime, which were divided into four groups: Group 1 (n = 10) - intact animals, Group 2 - rats with a model of subacute damage by vinegar (CH2O) (n = 10), Group 3 - a course of treatment with milk thistle oil after reproducing the toxic model (n = 20).

An experimental model of toxic liver damage was obtained by introducing 46% vinegar – per os at a dose of 0.2 ml per 100 g of animal weight, every other day, for a month. The drug was administered to rats using a probe with an olive orally at a dose of 0.2 ml per 100 grams of animal weight 3 times a day for 5 days after reproducing the toxic model.

ISSN 2181-3187

As a result of subacute vinegar damage, the content of leukocytes in the blood of rats increased by 2 times relative to the values in intact animals due to an increase in the absolute content of lymphocytes and segmented neutrophils ($p < 0.001$), while the level of monocytes did not change, remaining within the normal range. Subacute vinegar damage causes profound damage to hepatocytes , as evidenced by an increase in the activity of the cytoplasmic enzyme alanine aminotransferase (ALT) by 1.8 times ($p < 0.001$). An increase in the activity of the mitochondrial -cytoplasmic enzyme aspartate aminotransferase (AST) by 2 times relative to the control groups indicates predominant damage to the outer membranes of hepatocytes ($p < 0.001$).

An increase in alkaline phosphatase activity by 1.2 times ($p <0.001$) in the blood also indicates developing cholestatic massive necrosis of hepatocytes .

This type of intoxication is characterized by a decrease in the synthetic function of the liver in relation to total cholesterol, the content of which in the blood has decreased by 30%. Metabolic disorders are accompanied by a decrease in the concentration of creatinine by 31.5% , a decrease in the level of triglycerides and glucose in the blood by almost half. The concentration of total blood protein is practically no different from intact values.

The course of milk thistle oil intake on this experimental model had a pronounced therapeutic effect. The decrease in the level of inflammatory processes was recorded by a reliable decrease in leukocytosis ($p<0.001$), the number of monocytes and segmented neutrophils in the peripheral blood. An increase in the number of lymphocytes was also noted, which indicates a decrease in the activity of inflammatory processes. Similar changes were noted in other links of metabolic disorders. After the therapeutic course of milk thistle oil intake, the level of transaminases AST and ALT approached the intact values ($p<0.001$), but were lower than the corresponding values by 11% and 15%, significantly differing from the pathological model ($p<0.001$). The same favorable changes were recorded in the system of metabolic reactions. After the course of milk thistle oil , the glucose level exceeded the corresponding values of the

ISSN 2181-3187

control animals with acetic intoxication by 83.6% ($p<0.001$), cholesterol - by 26%, triglycerides - by 74.7% ($p<0.001$), creatinine - by 17.3%. The increase in alkaline phosphatase activity in subacute damage was leveled by 25.8% by therapeutic administration. The level of total blood protein was at the level of control figures.

Conclusions

It has been established that a therapeutic course of milk thistle oil for 5 days 3 times a day has a significant effect on various functional links of the body's metabolic processes in toxic liver damage by vinegar, providing a reparative , epithelializing , anti-inflammatory effect. The complex of chemical substances included in the oil extract stimulates gluconeogenesis , lipotropic , detoxifying , immunomodulatory function of the liver in vinegar intoxication.

References:

1. **Allayeva A.N.** (2023). DESCRIPTION OF DIAGNOSTIC AND THERAPEUTIC MEASURES AMONG ADULTS OF DIFFERENT AGES, SUFFERING FROM THE SALIVARY GLANDS DISEASES. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 1(9), 46–49. Retrieved from http://grnjournal.us/index.php/AJPMHS/article/view/1280

2. **Allayeva A.N.** (2023). STRUCTURAL CHANGES IN LIVER TISSUE FOR SIMULATED SKIN BURNS OF RATS. American Journal of Pediatric Medicine and Health Sciences (2993-2149), 1(10), 159–163. http://grnjournal.us/index.php/AJPMHS/article/view/1987

3. **Allayeva A.N.** (2023). MORPHOLOGICAL CHANGES IN THE LIVER DURING ACETIC ACID BURNS. American Journal of Pediatric Medicine and Health Sciences, 1(10), 150–155. http://grnjournal.us/index.php/AJPMHS/article/view/1985

4. **Allayeva, A. N.** (2024). INFLUENCE OF COMPREHENSIVE TREATMENT OF PATIENTS, FOR SUFFERING WITH CHRONIC

SIALODENITIS. International Journal of Integrated Sciences, 1(1). http://interspp.com/index.php/ijis/article/view/114

5. **Allayeva, A. N.** (2024). INTEGRATION OF DIAGNOSIS AND TREATMENT IN MODERN MEDICINE. International Journal of Integrated Sciences, 1(1). http://interspp.com/index.php/ijis/article/view/115

6. **Allayeva, A. N.** (2024). ПРИ КОМПЛЕКСНОЙ ТЕРАПИИ ГНОЙНО-ВОСПАЛИТЕЛЬНЫХ ЗАБОЛЕВАНИЙ ПОЛОСТИ РТА, ПРИМЕНЕНИЕ ПРЕПАРАТОВ БАКТЕРИОФАГОВ. International Journal of Integrated Sciences, 1(1). http://interspp.com/index.php/ijis/article/view/118

7. **Allayeva Aziza Nasridinovna.** (2024). SIRKA KISLOTASI KUYISHDA JIGARDAGI MORFOLOGIK O'ZGARISHLAR. TADQIQOTLAR.UZ, 38(2), 145–152. http://tadqiqotlar.uz/index.php/new/article/view/3180

8. **Allayeva Aziza Nasridinovna.** (2024). CHAYNOV MUSHAKLARINING KLINIK ANATOMIYASI PASTKI JAG' KINEMATIKA VA DINAMIGASI. TADQIQOTLAR.UZ, 38(2), 153–157. http://tadqiqotlar.uz/index.php/new/article/view/3181

9. **Allayeva Aziza Nasridinovna.** (2024). OG'IZ BO'SHLIG'INING YIRINGLI-YALLIG'LANISH KASALLIKLARINI KOMPLEKS DAVOLASHDA BAKTERIOFAGLARDAN FOYDALANISH. TADQIQOTLAR.UZ, 38(2), 158–161. http://tadqiqotlar.uz/index.php/new/article/view/3182

10. **Allayeva Aziza Nasridinovna.** (2024). ZAMONAVIY TIBIYOTDA TASHXISLASH VA DAVOLASHNING INTEGRATSIYASI. Лучшие интеллектуальные исследования, 20(4), 131–136. http://web-journal.ru/index.php/journal/article/view/5172

11. **Allayeva A.N.** (2024). SURUNKALI SIALODENIT BEMORLARNI KOMPLEKS DAVOLASHNING TA'SIRI. Лучшие интеллектуальные исследования, 20(4), 137–140. http://web-journal.ru/index.php/journal/article/view/5173

12. **Allayeva A.N.** (2024). ВЛИЯНИЕ КОМПЛЕКСНОГО ЛЕЧЕНИЯ ПАЦИЕНТОВ, СТРАДАЮЩИХ ХРОНИЧЕСКИМИ СИАЛОДЕНИТАМИ. INTERNATIONAL JOURNAL OF INTEGRATED SCIENCES, 1(1). http://interspp.com/index.php/ijis/article/view/116

13. **Allayeva A.N**. (2024). ИНТЕГРАЦИЯ ДИАГНОСТИКИ И ЛЕЧЕНИЯ В СОВРЕМЕННОЙ МЕДИЦИНЕ. INTERNATIONAL JOURNAL OF INTEGRATEDSCIENCES, 1(1). http://interspp.com/index.php/ijis/article/view/117

14. **Komilovna, K. M., Nasriddinovna, A. A., Jamsher o'g'li, A. S., & Jaxongirovna, N. Z. (2023)**. A Method For Assessing The Effectiveness Of Rehabilitation Of Women Of Fertile Age With Acquired Eyelid Defect. Journal of Advanced Zoology, 44, 2172–2176.

15. **L. R, J. ., A. N, A. ., & Sh. K, P. .** (2023). MAIN DIAGNOSTIC ASPECTS IN PATHOLOGICAL CONDITIONS OF THE SALIVARY GLANDS OF DIFFERENT GENESIS. International Conference on Research Identity, Value and Ethics, 472–478. https://www.conferenceseries.info/index.php/ICRIVE/article/view/1121

16. **Naimov, O. A., & Allayeva, A. N.** (2024). HEART RHYTHM DISORDERS AS A RESULT OF CHANGES IN IONIC CHANNELS. World Scientific Research Journal, 23(2), 106–116.

17. **Кандова, Ф. А., & Аллаева, А. Н.** (2023). ОСНОВНЫЕ ДИАГНОСТИЧЕСКИЕ АСПЕКТЫ ПРИ ПАТОЛОГИЧЕСКИХ СОСТОЯНИЯХ СЛЮННЫХ ЖЕЛЕЗ РАЗЛИЧНОГО ГЕНЕЗА. European Journal of Interdisciplinary Research and Development, 16, 179–188. https://www.ejird.journalspark.org/index.php/ejird/article/view/643

18. **Баева В.М.** Перспективы Применения Секвенирования ДНК для Изучения Лекарственных Растений на Примере Представителей Рода ANTHYLLIS L. Материалы Научно-Практической Конференции «Современные Аспекты Использования Растительного Сырья и Сырья Природного Происхождения в Медицине», СЕЧЕНОВСКИЙ ВЕСТНИК № 1 (11) 2013 г.

ISSN 2181-3187

19. **Ковтун А.В. [и др.].** Лекарственно–Индуцированные Поражения Печени. Диагностика и Лечение. Лечащий врач. Гастро-энтерология.– 2011.–№2.

20. **Шевченко Е.А.** Такие Разные Гепатопротекторы. VetPharma, 2015, №2.

21. **Кульбеков Е.Ф., Кульбекова Ю.В.** Гепатопротекторные Действия Тималина и Суспензии Красного Костного Мозга при Экспериментальном Токсическом Гепатите у Крыс. Фармация и фармакология, 2014, №5, С.24–28.

22. **Giri S., Nieber K., Bader A.** Hepatotoxicity and hepatic metabolism of available drugs: current problems and possible solutions in preclinical stages // Expert. Opin. Drug. Metab. Toxicol. – 2010. – Vol. 6 (8). – P. 895–917.

23. **Leung L., Kalgutkar A.S., Obach R.S.** Metabolic Activation in Drug-Induced Liver Injury. Drug Metab. Rev., 2012, Vol. 44(1), P. 18–33.