Journal of Chemistry of Goods and Traditional Medicine

J Chem Good Trad Med, Volume 4, Issue 6, 2025 Traditional Medicine

DETERMINATION OF THE ANTI-INFLAMMATORY ACTIVITY OF THE BIOLOGICAL ACTIVE SUPPLEMENT "ASSINSIL"

Ibragim R. Askarov
Andijan State University, Professor of the Department of Chemistry, Doctor of Chemistry, Honored Inventor of Uzbekistan, Chairman of the TABOBAT Academy of Uzbekistan
https://orcid.org/0000-0003-1625-0330

Mukhammadyusup A. Yusupov
Andijan State University, Teacher of the Department of Chemistry
https://orcid.org/0009-0003-7827-583X
E-mail: alpha_chemist@gmail.com

DOI: https://doi.org/10.55475/jcgtm/vol4.iss5.2025.563

Keywords:
inflammation, carrageenan model, anti-inflammatory activity, biologically active compound, leukocytes, mediators, acute-phase reaction, dose-dependent effect

Abstract
This article investigates the anti-inflammatory activity of the biologically active dietary supplement "Assinsil", obtained from artichoke and asparagus plants, using the "carrageenan-induced paw edema" model. Inflammation is a complex biological response of the body to various pathological injuries and forms the basis of many diseases. The main aim of the study was to determine the anti-inflammatory efficacy of the supplement at doses of 50 and 100 mg/kg and to compare the obtained results with the control group. Carrageenan was used as the inflammation model, and the effect of the preparation on acute exudative inflammation was assessed. The results demonstrated that higher doses of the biologically active dietary supplement exhibited pronounced anti-inflammatory effects.

How to Cite
Askarov, I. R., & Yusupov, M. A. DETERMINATION OF THE ANTI-INFLAMMATORY ACTIVITY OF THE BIOLOGICAL ACTIVE SUPPLEMENT "ASSINSIL". Journal of Chemistry of Goods and Traditional Medicine, 4(6). https://doi.org/10.55475/jcgtm/vol4.iss6.2025.563

Introduction. Inflammation is a complex biological process that develops in response to physiological or pathological damaging factors (microorganisms, injuries, toxins), and its proper regulation is essential for preventing many diseases [1,2].

The primary mechanism of inflammation is often associated with the body's reaction to localized injury (the site of inflammation). Migratory cells—leukocytes and macrophages—that form the inflammatory infiltrate play a key role in the inflammatory focus [3,4].

The inflammatory response includes several interrelated processes: the stress response of the neuroendocrine system (hypothalamic–pituitary–adrenal axis), immune reactions, and acute-phase responses. The main mechanism triggering inflammation is associated with the release of cytokines and other mediators from the inflammatory site into the bloodstream.

Experimental models used to study anti-inflammatory activity are based on mediators such as carrageenan, serotonin, histamine, and formalin [5].

Despite the high effectiveness of many anti-inflammatory drugs currently used in medicine, their long-term use is often accompanied by various side effects, including gastrototoxicity, hepatotoxicity, suppression of the immune system, and negative effects on the cardiovascular system [6–9]. Therefore, the development of agents based on biologically active compounds derived from natural plants remains an important and relevant task.

Experiments and discussion of results. The aim of this study was to compare the anti-inflammatory activity of the dietary supplement *"***Assinsil"** administered at doses of 50 and 100 mg/kg with the results of the control group, as well as to identify the most effective dose. Additionally, the effect of the preparation on acute exudative inflammation in the carrageenan model was evaluated and compared with control values.

For the preliminary assessment of anti-inflammatory activity, the classical "carrageenan-induced paw edema" model was used. The study was conducted on 15 rats (weighing 190 ± 20 g, of the same sex). The animals were divided into three groups: a control group and two experimental groups, with 5 animals in each.

Inflammation was induced by injecting 0.1 ml of a 1% carrageenan solution into the plantar surface of the hind paw. The preparations were administered orally 1 hour before the carrageenan injection in the form of powder at doses of 50 and 100 mg/kg of the *Assinsil* dietary supplement.

The inflammatory reaction was evaluated 1, 2, 3, and 4 hours after injection by measuring changes in paw volume. Anti-exudative activity was calculated based on the data obtained 3 hours after carrageenan administration [4].

In the control (untreated) group, the maximum edema was observed after 3 hours, reaching 83.6 ± 8.2% compared to the initial value; even after 4 hours, it remained elevated — by 47.9 ± 4.6%.

In the experimental groups, maximum edema was also recorded 3 hours after carrageenan injection; however, under the influence of the tested preparations, the values were almost normalized by the 4th hour. Table 1 presents the results in percentage terms for each observation period — at 1, 2, 3, and 4 hours.

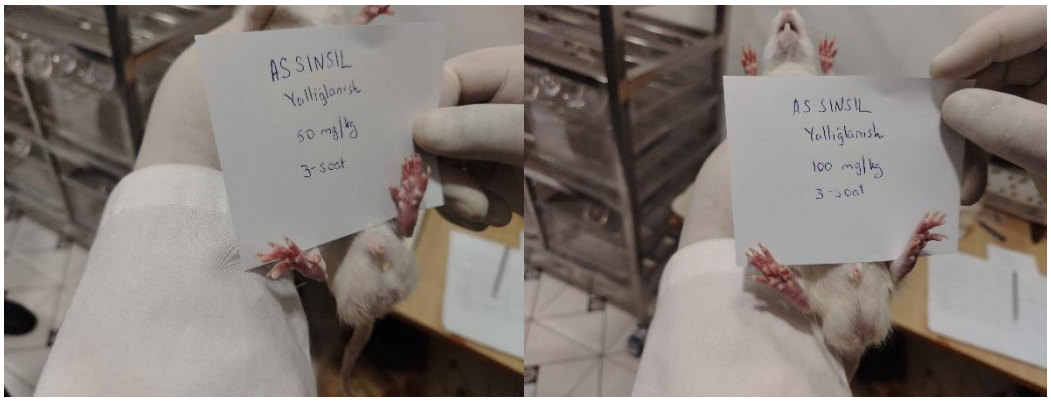
Table 1.

Effect of the biologically active supplement "Assinsil" at different doses on carrageenan-induced paw edema, expressed as a percentage relative to the baseline level (M±m; n=5)

Groups	Groups — Inhibition of inflammation, %			
	1 hour	2 hour	3 hour	4 hour
Control	35,4 ± 3,4	59,0 ± 5,8	83,6 ± 8,2	47,9 ± 4,6
Assinsil 50 mg/kg	10,6 ± 1,1	21,1 ± 2,0	30,1 ± 3,0	15,6 ± 1,5
Assinsil 100 mg/kg	15,6 ± 1,52	26,1 ± 2,5	43,5 ± 4,2	21,8 ± 2,2

According to the presented data, the anti-exudative effect of all the studied substances ranged within 48%, except for the "Assinsil" preparation at doses of 50 and 100 mg/kg, for which the value reached 64%.





In the experimental group, the maximum edema was also observed 3 hours after carrageenan administration; however, the anti-exudative effect of the preparations was calculated as a percentage relative to the value recorded at the 3rd hour, and the obtained results are presented in Table 2.

The anti-exudative activity was calculated using the following formula:

$$AEF = \Delta V_n - \Delta V_{taj} / \Delta V_n \times 100\%$$

where: **AEF** — anti-exudative activity, in percent; $\mathbf{\Delta V_n}$ — hind paw volume in the control group; $\mathbf{\Delta V_{exp}}$ — hind paw volume in the experimental group.

Table 2.

Anti-exudative activity of the biologically active supplement “Assinsil” at different doses compared to the control (M ± m; n = 5).

Groups	“Increase in paw volume 3 hours after induction, %”	“Anti-exudative effect, %”
Control	83,6 ± 8,2	-
Assinsil 50 mg/kg	30,1 ± 3,0	64
Assinsil 100 mg/kg	43,5 ± 4,2	48

Conclusions. Based on the results of the study of the anti-inflammatory activity of the dietary supplement *“***ASSINSIL”** administered in two powdered doses — 50 and 100 mg/kg — the following conclusions can be drawn:

Among the doses of 50 and 100 mg/kg, the 50 mg/kg dose demonstrated the highest anti-exudative activity, indicating its greater effectiveness compared with the 100 mg/kg dose.

It was established that the isolated dietary supplement *“*ASSINSIL” at a dose of 50 mg/kg exhibits pronounced anti-exudative activity, and this dose was selected for further research.

References

1. Доклиническое исследование лекарственных средств (методические рекомендации). Киев. - 2002, с.587 //под ред. А.В. Стефанова.
2. Medzhidov, A.A., & Sadykova, D.A. (2014). Vospalenie: biomolekulyarnyye mekhanizmy i farmakologicheskiye vozmozhnosti regulirovaniya. Tashkent: Ilm ziyo.
3. Grosser, T., Smyth, E., & Fitzgerald, G.A. (2011). Anti-inflammatory, antipyretic, and analgesic agents; pharmacotherapy of gout. In: Goodman & Gilman's The Pharmacological Basis of Therapeutics, 12th ed. New York: McGraw-Hill.
4. Auyeung, K.K., Han, Q.B., & Ko, J.K. (2016). Astragalus membranaceus: A Review of its Protection Against Inflammation and Gastrointestinal Cancers. American Journal of Chinese Medicine, 44(01), 1–22. DOI: 10.1142/S0192415X16500015
5. Методические рекомендации по доклиническому изучению нестероидных противовоспалительных лекарственных средств. / Руководство по проведению доклинических

исследований лекарственных средств. Часть первая, М. 2012, С.767-776. //под ред. Миронова А.Н.

6. Методические рекомендации по доклиническому изучению дерматотропных лекарственных средств./ Руководство по проведению доклинических исследований лекарственных средств. Частьпервая, М. 2012,С.738-746. //под ред. Миронова А.Н.
7. Сернов Л.Н., Гацура В.В. Элементы экспериментальной фармакологии. – М., 2000. – 352 с.
8. Гацура В.В. в кн: Методы первичного фармакологического исследования биологически активных веществ, М., 2000.