Impact Factor:					
	ISRA (India) = 6.317	SIS (USA) = 0.912	ICV (Poland) = 6.630
	ISI (Dubai, UAE) = 1.582	РИНЦ (Russia) = 3.939	PIF (India) = 1.940
	GIF (Australia) = 0.564	ESJI (KZ) = 8.771	IBI (India) = 4.260
	JIF = 1.500	SJIF (Morocco) = 7.184	OAJI (USA) = 0.350

SOI: 1.1/TAS DOI: 10.15863/TAS
International Scientific Journal
Theoretical & Applied Science
p-ISSN: 2308-4944 (print) **e-ISSN:** 2409-0085 (online)
Year: 2022 **Issue:** 07 **Volume:** 111
Published: 29.07.2022 **http://T-Science.org**

Issue Article

Gulnara Abdullaeyvna Shakhmurova
Tashkent state pedagogical university named after Nizami
professor, doctor of biological sciences,
head of the department of "Zoology and anatomy",
Uzbekistan

ANTI-INFLAMMATORY EFFECT AT SOME NATURAL COMPOUNDS, POSSESSING THE NORMALIZING EFFECT OF CARBOHYDRATE EXCHANGE IN THE ORGANISM

Abstract: *In this work, it is shown that the effect of anti-inflammatory activity in some natural compounds can have an inhibitory effect on the exudative phase of inflammation similar to diclofenac-sodium in the body in rats. And it was also revealed that some stimulating processes of proliferation of the studied synthetic anti-inflammatory drugs.*

Key words: *Diabetes mellitus, anti-inflammatory activity, hypoglycemic agents.*
Language: *English*
Citation: Shakhmurova, G. A. (2022). Anti-inflammatory effect at some natural compounds, possessing the normalizing effect of carbohydrate exchange in the organism. *ISJ Theoretical & Applied Science, 07 (111),* 204-207.
Soi: http://s-o-i.org/1.1/TAS-07-111-27 ***Doi***: crossref https://dx.doi.org/10.15863/TAS.2022.07.111.27
Scopus ASCC: *3003.*

Introduction

UDC: 615.322

Diabetes is often accompanied by the development of various kinds of inflammatory processes in the organism [1, 3]. Therefore, by conducting a search for hypoglycemic agents among substances of plant origin, possessing, as a rule, with a versatile therapeutic effect, an important value should be given to the presence of their potential anti-inflammatory effect [6, 7, 8]. In the actual work, the data analyzes are given, received under the study of the antiflogistic activity of the sums of triterpene glycosides from *Zygophyllum oxianum* (the main glycoside is zygophyloside E), the bicyclic diterpenoidaclerodane ranges – salvipholin, isolated from *Pulicaria salvifolia*, the sums of phytoecdisteroids from *Silene brahuica (it* contains ecdisteron, sileneozids of C, D, E, and etc.) and polyprenols from *Alceae nudiflora.* For all these substances, it was shown previously the presence of either a pronounced sugar-lowering effect or a positive effect on the impaired carbohydrate metabolism in the organism, as a whole [2, 9, 10].

The experiments were performed on male rats by weighing of 160-170 g. The anti-inflammatory effect of the studied substances was evaluated on models of acute inflammation as the ability to inhibit paw edema (determined oncometrically), caused by the administration under plantar aponeurosis, of 0.2 ml of 1% formalin solution, 0.1 ml of 6% dextran, 0.5% serotonin, 0.1% histamine and 0.01% bradykinin, as well as a decrease in the amount of serous fluid, generated during pleurity or peritonitis, caused by the introduction of 0.2% silver nitrate solution in 0.5 and 1.0 ml into the pleural or abdominal cavities accordingly. The results were taken into account at the maximum of the development of the corresponding changes in the control (with formalin edema after 3 hours, with others after 2 hours).

To determine the antiproli-ferative properties of substances, rats were implanted with sterile cotton balls of weighing 10 mg under the back skin. After a week, the rats were sacrificed (under light ether anesthesia), the pellets together with the granuloma developing around them were husked and dried in an oven to constant weight at t = 75 ° C. The mass of granulation-fibrous tissue was determined by the difference between the masses of the dried granuloma and the implanted ball. The sum of triterpene hyaicosides (SuTG) from *Zygophyllum oxianum*, salvifoline from *Pulicaria salvifolia*, the sum of

phytoecdio-steroids (SPE) from *Silene brahuica* and polyprenols from *Alceae nudiflora* were administered to animals at doses of 10.0, 10.0, 5.0 and 25 mg/kg respectively orally: under studying of antiexudative properties - on the eve of the experiment, and after for 2 hours until and through 30 minutes after inoculation of phlogogenic agents, under studying of antiproliferative properties - once a day for 7 days. The comparison preparation was diclofenac sodium, administered in a similar manner at a dose of 25 mg / kg. All obtained material during the experiment was statistically processed using t-criteria of Student t-test.

The results of the conducted researches showed, that all the studied substances, significantly inhibited the exudative phase of formalin, dextran, serotonin, histamine and bradykinin inflammation, that developing in rats after subplanetary administration of the used phlogogens. However, their effect in this regard was quite significantly different.

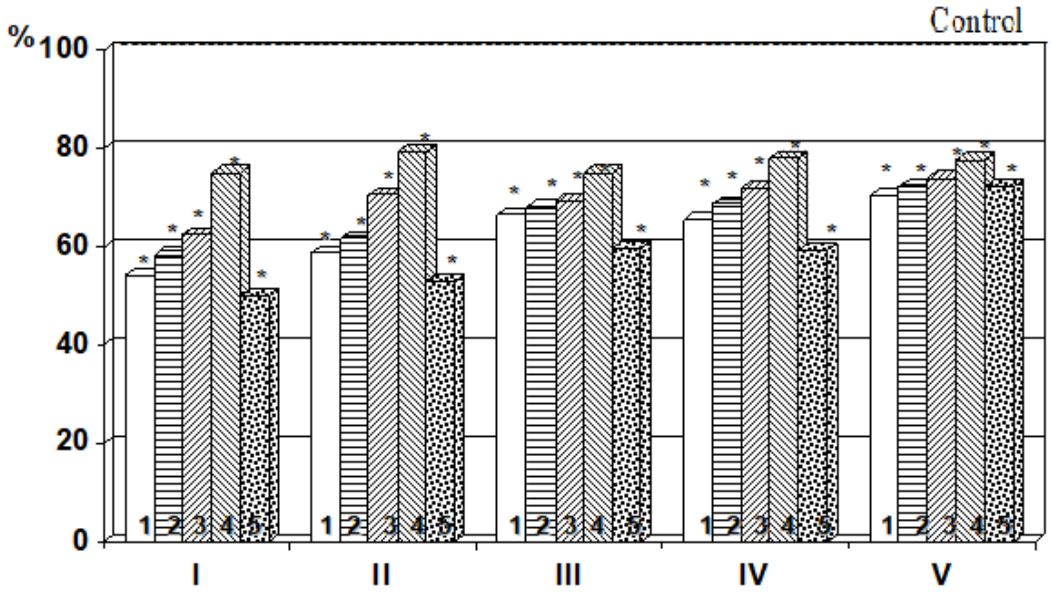

Fig. 1. The effect of the sums of triterpene glycosides from *Zygophyllum oxianum* (1), salvifolin (2), the sum of phytoecdysteroids from *Silene brahuica* (3), polyprenolysis of *Alceae nudiflora* (4) and diclofenac sodium (5) on aseptic inflammation (growth in foot volume in % of the initial at the peak of the action of the phlogogenic agent): I - formalin, II - dextran, III - serotonin, IV - histamine, V - bradykinin, n = 6. * - Reliable in relation to control (confidence level was adopted at p <0.05).

We can see from Figure 1, the anti-inflammatory activity decreased in this test in the following sequence: SuTG from Z. oxianum> salvifolin> SPE from *S. brahuica*> PP from *A.nudiflora*. Moreover, while SuTG from *Zoxianum* and salvifoline did not significantly differ on antiflogistic effect from the corresponding effect of diclofenac-sodium (although, as a rule, they were slightly weaker), then SPE from *S. brahuica* and, especially, the polyprenol fraction from *A. nudiflora* were noticeably inferior to it on activity. A similar picture was observed with experimental serositis (Fig. 2).

Under the influence of SuTG from *Z. oxianum* and salvifolin, the amount of exudate (after 6 hours from the start of the experiment) in the pleural cavity was 35.8-33.3% less than in the control, and in the abdominal cavity it was 36.7-35.9% less than in the control. Under the influence of SPE from *S. brahuica*, this effect was 26.7 and 28.3 %, and under the action of polyprenols from *A. nudiflora* - 18.3 and 20.1%. Diclofecan-sodium decreased the amount of exudate in the pleural and abdominal cavities by 36.7 and 37.4%. As for the results, obtained in the study of the antiproliferative activity of the studied substances, they were multidirectional in nature. SuTG from *Z. oxianum* and salvifolin, similarly to diclofenac-sodium, significantly reduced the mass of granulation-fibrous tissue, formed around animals implanted into the subcutaneous tissue balls

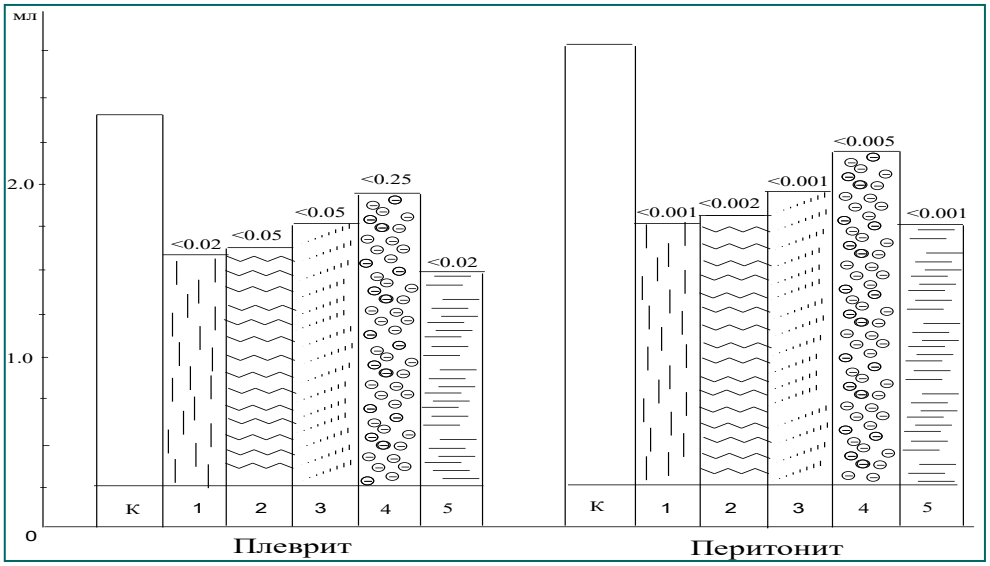

Fig. 2. The effect of the sums of triterpene glycosides from *Zygophyllum oxianum* (1), salvifolin (2), the sum of phytoecdysteroids from Silene brahuica (3), polyprenols from *Alceae nudiflora* (4) and diclofenac-sodium (5) on the severity of exudation in experimental serositis (pl) rats, n = 6. To - control.

(in the control, it was 68.2 mg, in rats that were injected with SuTG from *Z. oxianum* - 47.4 mg, salvifolin - 54.6 mg, and diclofenac sodium - 44.3 mg). The inhibitory effect in the case of using SuTG from *Z. oxianum* and salvifoline was 30.5 and 19.9%, and in the case of diclofenac sodium, it was 35.1%. The introduction of SPE from *S. brahuica* and PP from *A. nudiflora* to rats with implanted cotton balls for 7 days led to an increase in the mass of granulation-fibrous tissue (table), that is, both of these substances stimulated the proliferative phase of inflammation.

Data on the absence of phytoecdysteroids from *S. brahuica* and polyprenols from *A. Nudiflora* in the amount of the inhibitory effect on the tissue regeneration phase to some extent confirms their previously identified ability to exert a stimulating effect on the regenerative processes in the organism, as a whole [4, 5].

Table 1. Effect of the sum of triterpene glycosides from Zygophyllum oxianum, salvifolin, the sums of phytoecdysteroids from Silene brahuica, polyprenols from Alceae nudiflora and diclofenac sodium on the formation of "cotton granuloma" in rats (M ± m, n = 6)

Experiment Conditions	The mass of granulation tissue, mg	Change,% of control	*P*
Control	68.2±4.6	—	—
SuTG from Z. *oxianum*	47.4±2.6	-30.5	<0.01
salvipholin	54.6±2.8	-19.9	<0.05
SPE from *S. brahuica*	86.2+5.2	+23.6	<0.05
PP from *A. nudiflora*	80.5±2.8	+18.0	<0.05
Diclofenac - sodium	44.3±2.2	-35.1	<0.001

Thus, the sums of triterpene glycosides from *Z. oxianum*, salvifolin, the sum of phytoecdysteroids from *S. brahuica*, and polyprenols from *A. nudiflora* have an inhibitory effect on the exudative phase of inflammation similar to diclofenac-sodium. At the same time, the studied amount of phytoecdysteroids and the fraction of polyprenols, unlike diclofenacanatrium (as a representative of synthetic anti-inflammatory drugs), stimulate proliferation processes.

References:

1. Balabolkin, M.I., & Gavrilyuk, L.I. (1983). *Diabetes mellitus.* (p.200). Chisinau: Stiinza.
2. Khushbaktova, Z.A., Tashmukhamedova, M.A., Syrov, V.N., Mirtalipov, D.T., & Grunina, I.N. (1992). The effect of salvifolin on carbohydrate and lipid metabolism in the liver of rats under conditions of alloxan diabetes. *Ukrainian Biochemical Journal*, No.3, pp.86-91.
3. Syrov, V. N., Shakhmurova, G. A., Yuldasheva, N.K., Yusupova, S. M., & Khushbaktova, Z. A. (2021). Pharmacological correction of ecdisten of hyperglycemic states, morphological changes in the pancreas and immunobiological status of the organism of rats with alloxan diabetes. «*European science review*», № 5-6, pp. 3-8. https://doi.org/10.29013/ESR-21-5.6-3-8
4. Syrov, V.N., Weiss, E.V., Tursunova, N.V., Shakhidoyatov, H.M., & Khushbaktovaz, A. (2011). *On the pharmacology of polyprenols from Alceae nudiflora*. VII All-Russian Scientific Conference "Chemistry and technology of plant substances". Abstracts of reports. Syktyvkar. (p.134).
5. Syrov, V.N., Yuldasheva, N.H., Egamova, F.R., Ismailova, G.I., Abdullaev, N.D., & Khushbaktova, Z.A. (2012). Assessment of the hypoglycemic effect of phytoecdysteroids. *Journal of Experimental and Clinical Pharmacology*, Vol.75, No. 5, pp.28-31.
6. Ways, Y. V., Yusupova, S. M., Khidirova, N.K., Shakhmurova, G. A., Egamova, F.R., Khushbaktova, Z. A., Zakirova, U.T., & Syrov, V. N. (2020). Comparative study of hepatoprotective activity of polyprenols from Vitis vinifera (Vitaprenol) and carsil in experiences on rats with hepatitis, caused by four-chloride carbon. *Journal of Critical Reviews*, Vol. 7, Issue 13, pp.724-727. DOI: http://dx.doi.org/10.31838/jcr.07.13.127
7. Ways, Y. V., Yusupova, S. M., Khidirova, N.K., Shakhmurova, G. A., & Syrov, V. N. (2020). Experimental evaluation of the immunotropic effect of the polyprenols from Vitis vinifera. *European Science Review*, № 5-6, pp. 22-26. https://doi.org/10.29013/ESR-20-5.6-22-26
8. Ways, Y. V., Yusupova, S. M., Shakhmurova, G. A., Khushbaktova, Z. A., & Syrov, V. N. (2021). Influence of polyprenols from Alcea Nudiflora and Vitis Vinifera to the healing process of experimental skin wounds in laboratory animals. *American Journal of Medicine and Medical Sciences*, 11(1), pp.7-11. DOI: 10.5923/j.ajmms.20211101.02
9. Weiss, E.V., Van, E.V., Tursunova, N.V., Zahidova, L.T., Khushbaktova, Z.A., & Syrov, V.N. (2013). Pharmacotherapeutic effect of polyprenols in toxic liver damage. *The journal "Infection, immunity and Pharmacology"*, No. 3, pp.7-9.
10. Yuldasheva, N.H., Sasmakov, S.A., Khushbaktova, Z.A., & Syrov, V.N. (2012). On the hypoglycemic effect of the sum of triterpene glycosides from Zygophyllum oxianum. *Reports of the Academy of Sciences of the Republic of Uzbekistan*, No. 1, pp. 58-60.