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BIOLOGICALLY ACTIVE SUBSTANCES FROM PLANT *SUDAEDA VERA* AND THEIR ANESTIZING ACTIVITY

Abstract. The article presents the results of a complex study of the chemical compositions of conditional phytopreparations obtained from the aerial part of the *Suaeda Vera* family of the *Chenopodiaceae* collected during the flowering period in the Ili region of the Almaty region of the Republic of Kazakhstan.

The structures of the compounds characteristic for the given plant and providing some aspects of their therapeutic activity. Examined and proven, in particular high-performance liquid chromatography from an alcohol extract obtained from the aerial part of *Suaeda Vera*, apigenin and rutin, flavanoids characteristic of plants of the family *Chenopodiaceae* and having proven anti-inflammatory, antioxidant and immunostimulating activity, are also found amino acids, tannins, carbohydrates, phenols, alkaloids, saponins, triterpenoids typical for plants common in arid zones.

The drug in question showed significant analgesic activity in an in vivo test on laboratory animals, while the diclofenac sodium, well known in medical practice, served as a comparative drug.

The work on the study of the plant continues.

Key words: *Chenopodiaceae, Suaeda Vera*, standardization, phytopreparation, content of BAS, activity.

Introduction. The purpose of this work is to identify biologically active substances from certain plants growing in arid zones of Kazakhstan and to study the activity of a conventional phytopreparative obtained from this plant.

One of the research tasks was the study of the phytochemical compositions of the conditional phytopreparations obtained from the above-ground part of *Suaeda Vera* [1-7]. The choice of objects is related to:

- The wide distribution of representatives of the genus *Suaeda* on the territory of the Republic of Kazakhstan, which determines their industrial reserves;
- Unpretentiousness, endurance, easy adaptation to the environment;
- The expediency of harvesting the aerial part of plants, since it takes about a year for vegetative restoration, whereas in the case of harvesting roots - two years;
- The optimality of the methods of obtaining conditional phytopreparations in the form of dry residues, cost-effectiveness and environmental safety of the technology.

Thus, *Suaeda Vera*, indeed is a promising plant, to create domestic phytopreparations, obtained from plant raw materials, growing in the arid zone of Kazakhstan.

In this paper, we studied some hydrolysable phenolic compounds contained in 85% ethanol extract isolated from the aerial portion of the *Suaeda Vera* plant of the *Chenopodiaceae* family.

From the plant under investigation, a conditioned phytopreparation was obtained.The indicators of good quality of the conditional phytopreparation: humidity, total ash, 10% insoluble ash in hydrochloric acid and sulfate ash, are determined in accordance with the methods described in the State Pharmacopoeia of the 1st edition of [8].

From the plant under investigation, a conditioned phytopreparation was obtained. During the extraction, the plant material studied showed a high level of extraction.

An important indicator of the good quality of raw materials is the mineral composition, which contains the following elements: K. Na, Mg, Ca, Fe, C, Si, P less often and in a smaller amount of Cu, Mn, Al, etc. [9-14].

Methods. At the initial stage, we obtained an 85% water-alcohol extract from the aerial part of the *Suaeda Vera* plant, according to the following procedure:

The air-dried raw material was subjected to extraction by infusion with 85% aqueous ethanol at room temperature for 3 days. Extraction is repeated twice. The combined extract is concentrated on a rotary evaporator until ethanol is completely removed.

Methods of two-dimensional and one-dimensional paper chromatography using specific developers as well as by TLC in various solvent systems found that 85% hydroalcoholic extract of the major groups of biologically active substances aboveground mass of the test plants are substances of phenolic character which previously attributed to oxidized forms of flavonoids (aglycone - quercetin, izoramnentinu, hrizo-eriolu, flavonolovym glycosides), carbohydrates (fructose, galactose, glucose, xylose, rhamnose), phenols (pirokate in, pyrogallol, resorcinol, hydroquinone), carotenoids, phenolic, amino and fatty acids [15-26].

Further, by high-performance liquid chromatography with an ultraviolet detector at a wavelength of 254 nm in a methanol / 5% acetic acid solvent system in a ratio of 40:60 with a Zorax CB C-18 column 150 * 4.6 mm at a flow rate of 0.5 ml/min. The weight of the sample 0.001 g in 5 ml of the solvent from the phytopreparation was isolated a number of substances, after comparison with the obtained data with standard samples; we managed to identify apigenin and rutin.

In our work, the analgesic activity of the 85% *Suaeda Vera* extract was determined on the scientific and technological basis of JSC "International Research and Production Holding Fhitochemistry "in a chemical peritoneal stimulus test on white mongrel mice. By the following method. A 0.75% solution of acetic acid was administered intraperitoneally in an amount of 0.1 ml per 10 g of animal weight. 30 minutes prior to the administration of acetic acid, the subjects under study were intragastrically administered at a dose of 5 mg/kg. Immediately after the introduction of the stimulus, the cortex was counted for 30 minutes.

The analgesic effect of the sample was determined by the ability to reduce the number of "cramps" during 10, 15, 20 and 30 minutes, compared with the corresponding values in the control group [30]. Comparison drug "Diclofenac sodium", which was tested at a dose of 8 mg/kg.

Results and discussion. *Suaeda Vera* found: flavonoids, amino acids, tannins, carbohydrates, phenols, saponins, triterpenoids.

Using high-performance liquid chromatography with a spectrometric detector using standard samples in 85% extract obtained from the aerial part of the *Suaeda Vera* plant, we identified, identified, and quantitated routines and apigenin belonging to the flavonoid class. The data are presented in table 1.

Table 1 – Flavonoids identified in the aerial part of *Suaeda Vera* using standard samples

Number of compound	Name of compound	Molecular formula	Retention time, min	Qantity, %
1	Apigenin	$C_{15}H_{10}O_5$	11,294	0,21
2	Routine	$C_{27}H_{30}O_{16}$	9,303	0,03

Table 2 – Results of the determination of the anesthetic activity of the extract from the aerial part of *Suaeda Vera*

Name of sample, dose		Reducing the number of "vinegar cramps" and the difference from those shown in the control			
		10 min	15 min	20 min	30 min
Control	–	28±8,1	50,5±4,7	64,8±7,5	91,0±12,4
Diclofenac sodium	8 mg/kg	23,5±5,6	41,3±5,0	56,3±5,2	65,3±7,9
Suaeda vera	5 mg/kg	29±8,6	43,0±10,8	55,8±10,3	71,3±16,0

In addition, by in vivo method in laboratory mice, we determined the biological activity of 85% alcohol extract from the aerial part of *Suaeda Vera*, as a result, it was revealed that the extract of the plant under study has some anesthetic effect. Data on anesthetic action are presented in table 2.

In general, comparable in the level of exposure to sodium diclofenac, with a comparable effect achieved with a lower dose of the drug administered, 5 mg/kg of *Suaeda Vera* extract against 8 mg/kg of diclofenac sodium.

Conclusion. As a result of the study of the chemical composition and biological activity of 85% of the extract obtained from the above-ground portion of the *Suaeda Vera* plant of the *Chenopodiaceae* family, we found that the investigated object contains minor flavanoids: rutin and apigenin, plant BAS classes such as phenolic acids, amino acids, free organic acids, polysaccharides, carbohydrates, phenols and carotenoids. Anesthetic activity of 85% alcohol extract was determined and it is proved that it is comparable in effectiveness with the drug Diclofenac sodium.

The work on further study of the chemical composition and biological activity of the plant to study the plant Suaeda Vera continues.

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SUAEDA VERA ӨСІМДІГІНІҢ БИОЛОГИЯЛЫҚ БЕЛСЕНДІ ЗАТТАРЫ ЖӘНЕ ОНЫҢ АУРУДЫ БАСУ ҚАБІЛЕТТІЛІГІ

Аннотация. Мақалада Қазақстан Республикасы, Алматы облысы, Іле ауданынан гүлдеу кезінде жиналған *Chenopodiaceae* тұқымдасы, *Suaeda Vera* өсімдігінің жер беті бөлігінен алынған шартты фитопрепараттың химиялық құрамының кешенді зерттеу нәтижелері жүргізілген.

Зерттелетін өсімдікке тән заттар қарастырылып, терапевтік белсенділік көрсететін қосылыстардың құрлысы келтірілген. Жоғарғы сұйықты хроматография әдісінің көмегімен *Suaeda Vera* өсімдігінің жертүсті бөлігінен алынған спирттік экстрактіден апигенин және рутин анықталған, бұл заттар *Chenopodiaceae* тұқымдасына тән болып есептеледі, сонымен қатар өсімдікте аминқышқылдар, көмірсулар, фенолдар, тритерпендер, сапониндер, алкалоидтар және тері илегіш заттар анықталған, олар қабынуға, тотығу үрдісіне және иммунстимулдеуші қасиет көрсетеді.

Алынған препарат зертханалық жағдайда *in vivo mecm* кезінде ауруды басушы белсенділік көрсеткен, салыстырмалы препарат есебінде медициналық практикада белгілі натрий дихлофенагі алынған.

Өсімдікті зерттеу жұмысы жалғасуда.

Түйін сөздер: Алабұта тұқымдас (*Chenopodiaceae*) өсімдік: *Suaeda Vera,* стандарттау, фитопрепарат, ББЗ құрамы, белсенділік.

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БИОЛОГИЧЕСКИ АКТИВНЫЕ ВЕЩЕСТВА ИЗ РАСТЕНИЯ РОДА *SUAEDA VERA* И ИХ АНЕСТИЗИРУЮЩАЯ АКТИВНОСТЬ

Аннотация. В статье представлены результаты комплексного исследования химических составов условных фитопрепаратов, полученного из надземных частей *Suaeda Vera* семейства *Chenopodiaceae*, собранные в период цветения в Илийском районе Алматинской области Республики Казахстан.

Рассмотрены и доказаны структуры соединений характерных для данных растении и обеспечивающих некоторые аспекты их терапевтической активности, в частности методом высокоэффективной жидкостной хроматографии из спиртового экстракта полученного из надземной части *Suaeda Vera* выделены апигенин и рутин являющиеся флаваноидами характерными для растений семейства *Chenopodiaceae* и имеющие доказанную противовоспалительную, антиоксидантную и иммуностимулирующую активность также обнаружены аминокислоты, дубильные вещества, алкалоиды, углеводы, фенолы, сапонины, тритерпеноиды.

Рассматриваемый препарат показал значительную анальгетическую активность при тесте *in vivo* на лабораторных животных, препаратом сравнения при этом выступал хорошо известный в медицинской практике диклофенак натрия.

Работа по исследованию растения продолжается.

Ключевые слова: растения семейства Маревые (*Chenopodiaceae*): *Suaeda Vera,* стандартизация, фитопрепарат, содержание БАВ, активность.

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