

Effect of Dry Extracts of Medicinal Plants on Urinary Excretion and Ion Exchange

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Abstract: According to the results of an experimental scientific study, in relatively small doses of dry extracts of the studied plants (100 µg/kg + 50 mg/kg), the average urinary excretion was 61.9% compared to the control group, and in large doses (250 µg + 100 mg/kg) was found to increase by 73.8%. Therefore, when plant extracts are used in the studied doses, their effect on urine excretion remains at full blood level.

Keywords: Medicinal plants, diuretic, *Achillea millefolium* L., *Herba Meliloti* L., dry extract.



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Introduction. Medicinal plants play an important role in traditional and modern medicine [1,2,3,4,5,6,7]. widely used. Tinctures and decoctions made from the plant and its flowers are widely used in folk medicine and scientific medicine to stop bleeding, heal wounds, and treat kidney, lung, and gastrointestinal diseases. *Achillea millefolium* L. (Yarrow) is an important species of the Asteraceae family and has been used in traditional medicine in many cultures from Europe to Asia for the treatment of spasmodic diseases of the gastrointestinal tract, hepatobiliary, gynecological diseases, anti-inflammatory and wound healing. widely used in treatment. An extensive literature review was conducted on *A. millefolium* L. using ethnobotany textbooks, peer-reviewed journal articles, unpublished materials, and scientific databases. The Plant List, International Plant Name Index and Kew Botanic Gardens databases were used to confirm scientific names. Monoterpenes are the most representative metabolites, accounting for 90% of essential oils compared to sesquiterpenes, and a wide range of chemical compounds has also been reported. Various pharmacological experiments conducted in many in-vitro and in-vivo models have proven the potential of *A. millefolium* with anti-inflammatory, anti-ulcer, anti-cancer, etc. Due to its remarkable pharmacological activity, *A. millefolium* is the best option for new drug discovery. This review comprehensively summarizes the pharmacognosy, phytochemistry and ethnopharmacology of *A. millefolium* and highlights the need for more in vitro, clinical and pathological studies to explore the untapped potential of this plant[8]. This study shows that extracts from *Achillea millefolium* can effectively increase diuresis when administered orally to rats. This effect depends on both the activation of bradykinin B2 receptors and the activity of cyclooxygenases[9]. Plasma nitric oxide metabolites were significantly reduced after administration of *A. millefolium* in patients with chronic kidney disease, versus the placebo group. High doses or prolonged use of the plant can significantly increase these changes[10]. Information on the function of *Melilotus officinalis*(L.) Pall. in skeletal muscle is still unknown. In this study, we investigated the possible regulatory targets of *M. (L.) Pall.*

This affects repair methods in chronic muscle injuries. We analyzed the potential target genes and chemical composition of *M. (L.) Pall.* and generated a "drug-component-disease target genes" network analysis. Five active compounds and 87 corresponding targets were obtained. Muscle-tendon junction (MTJ) cells were used for receptor-ligand marker analysis using the CellphoneDB algorithm.

M. (L.) Pall's Aims. A further investigation was carried out for the effect of cellular ligand-receptor protein on MTJs. Enrichment analysis suggests that protein-bound ligand receptors may be associated with a number of intercellular signaling pathways. Molecular docking validation was then performed. Five proteins (CCL2, VEGFA, MMP2, MET and EGFR) can be controlled by the active substances luteolin and scoparone. Finally, molecular dynamics simulations revealed stable binding of luteolin to MMP2. M. (L.) Pall. affects skeletal muscle repair patterns by influencing fibroblast interactions at muscle-tendon junctions through its active ingredients luteolin and scoparone[11]. Therefore, plants used in traditional medicine play an important role in maintaining health and introducing new treatments in all parts of the world. Related areas such as ecology and cultural conservation should be integrated into any such program. Therefore, plants used in traditional medicine play an important role in maintaining health and introducing new treatment methods in all parts of the world[12,13,14,15,16,17,18,19,20,21].

Common yarrow plant is used in modern medicine as a hemostatic drug, and yarrow plant is used as a hemostatic, antispasmodic and diuretic. Natural products such as plants and their isolated compounds have been widely used in experimental models of gastric ulcer. Kashgarbeda plant and preparations extracted from it are used in folk medicine and medicine as blood clotting and antiaggregant drugs. has been and is being used on a large scale for its enhancing and other effects.

A tincture made from the Kashgarbeda plant and its flowers is used in Bulgaria for chronic bronchitis, for the prevention of various kidney and urinary bladder pains, for the treatment of arterial blood pressure, migraine, and pathological conditions associated with climax. Cultivated in southern Europe, the leaves and flowers of the saffron are widely used in cooking. It is added to various desserts and cheeses to give it a full flavor. In France, preparations made from this plant and its flowers are used as antispasmodics and anticoagulants, and in cooking - to give flavor and color to culinary products. In Austria, it is called "honey alfalfa" and it is used for stomach and intestinal diseases, chronic bronchitis, and for the purpose of giving aromatic flavor to food. In Germany, the flowering top of the plant is widely used for chronic bronchitis, skin diseases and as a laxative, and in Poland for various headaches, heart palpitations and pain, insomnia, hemorrhoids and other ailments. Kashgarbeda is widely used not only in European countries, but also in Asian countries. For example, in India, they used the decoction and tincture of kashqarbeda plant as a laxative, gas reducer, and in case of bleeding disorder[22,23].

The purpose of this work. Taking into account the above, we studied the effect of the dry extract isolated from the tubulifolia plant on diuresis in separate experiments.

Materials and methods.The experiment was conducted on 18 different sexes of laboratory rats weighing 147-152 g. In screening experiments, the amount of urine excreted in rats was measured each day. Then 4 ml of distilled water per 100 g weight of rats was administered orally and the amount of urine released in 1 day was measured. This experiment was carried out 3 times and the average amount of urine excreted by each rat in 1 day was determined. Then the rats were divided into 3 groups of 6: Group 1 was the control group, and they received distilled water (4 ml per 100 g of rat weight). Groups 2-3 are the experimental group, which were given 100 mg/kg and 250 mg/kg of the dry extract of the studied plant to rats (4 ml of dist. water per 100 g of their weight), respectively. was sent and the amount of urine excreted in 1 day was measured.

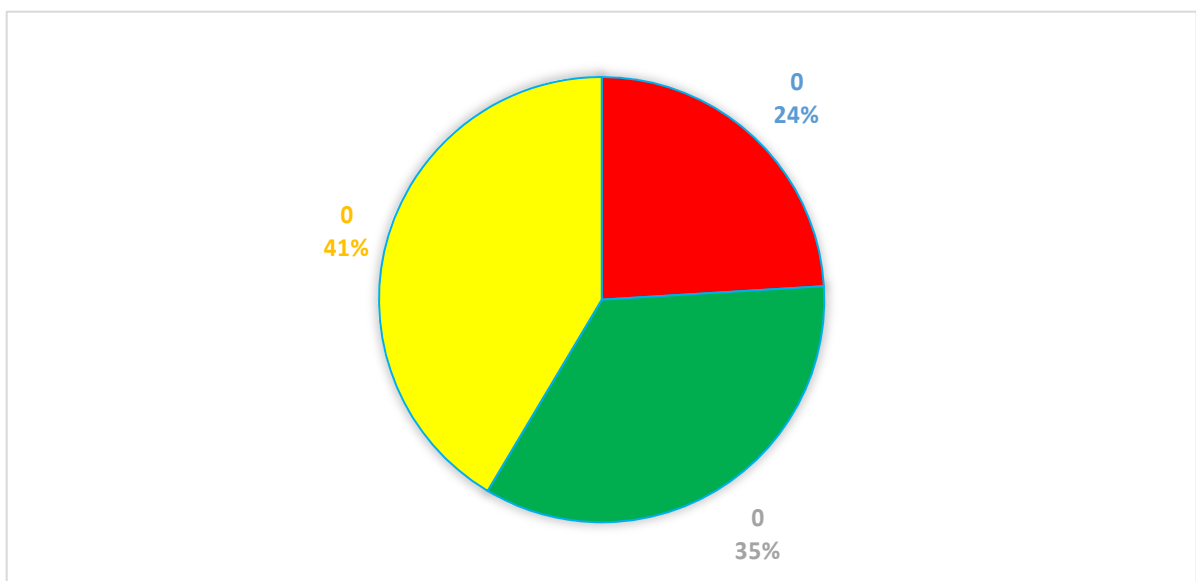
Research results. This series is presented in table 3.4 under the experimental results. As can be seen from the table, the average amount of urine released from each rat in the control group was 4.35 ± 0.19 ml. Under the same conditions, the average amount of urine excreted per day was 6.25 ± 0.48 ml in rats that received 100 mg/kg dry extract of the plant. and the amount of urine excreted in the rats was equal to 7.5 ± 0.29 ml.

1. – table. The effect of dry extract of St. John's wort on urine excretion in rats (M±m)

Groups	Number of animals	Sent dose, mg/kg	The amount of urine excreted		%
			until drug delivery, (ml)	prepare sent by rat after, (ml)	
Control group	6	4 ml/100 g H ₂ O	4,25 0,49	4,35 0,19	100
Experimental group	6	100 mg/kg		6,25 0,48*	143,6
Experimental group	6	250 mg/kg		7,5 0,29*	172,4

Note: *P< 0.05 vs. control

But it should also be noted that during the clinical trials of the tincture of the tuberose plant as a diuretic drug, clinicians took into account the positive effect of the herbal tincture on urinary excretion, as well as the ability to enhance the blood clotting process. noted that there is.



This is considered a side effect of herbal tincture in most patients. That's why the clinicians who conducted the clinical trial said that it is necessary to add herbs that slow down the process of blood clotting to the tincture of the tuberose plant.

Taking into account the above, we studied the effect of dry extract of kashqarbeda plant on urinary excretion. It is known from the literature that kashqarbeda plant and preparations extracted from it are used in folk medicine and medicine as blood clotting and antiaggregant drugs.

Based on the obtained results, it was noted that the study plant extract increased urinary excretion by 37.8% and 52.1%, respectively, compared to the control group.

So, the dry extract of kashgarbed also increases urine excretion (Table 1).

Based on the results obtained from the experiments, when the dry extracts from both plants were used together, their effect on urine excretion was studied. The obtained results are presented in As a result, in relatively small doses of dry extracts of the studied plants (100 µg/kg + 50 mg/kg), the average urinary excretion was 61.9% compared to the control group, and in large doses (250 µg + 100 mg/kg) it was 73, It was determined to increase by 8%. Therefore, when plant extracts are used in the studied doses, their effect on urine excretion remains at full blood level.

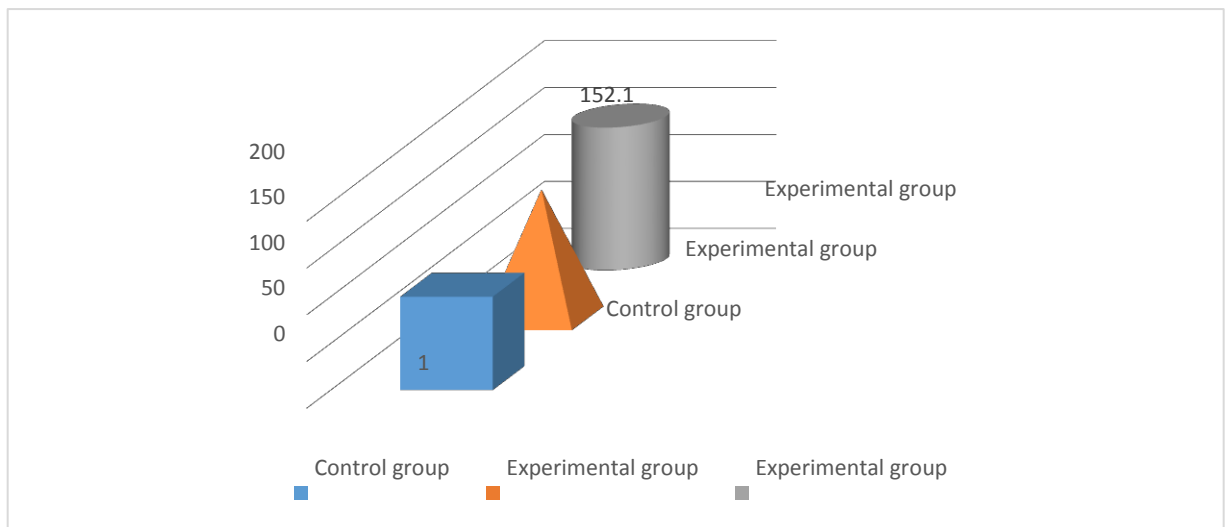
Table 2.

2. – table. Effect of Kashgarbed dry extract on urine excretion in rats (M±m)

Groups	The amount of urine excreted		%
	until the drug is administered, (ml)	after injection, (ml)	
Control group	4,25 0,35	4,2 0,42	100
Experimental group		5,79 0,37*	137,8
Experimental group		6,39 0,47*	152,1

Note: *P< 0.05 vs. control

It is known from the literature that the disturbance of the exchange of electrolytes, in particular Na⁺ and K⁺, is of great importance in the violation of urine excretion. Taking this into account, a special experiment was conducted.

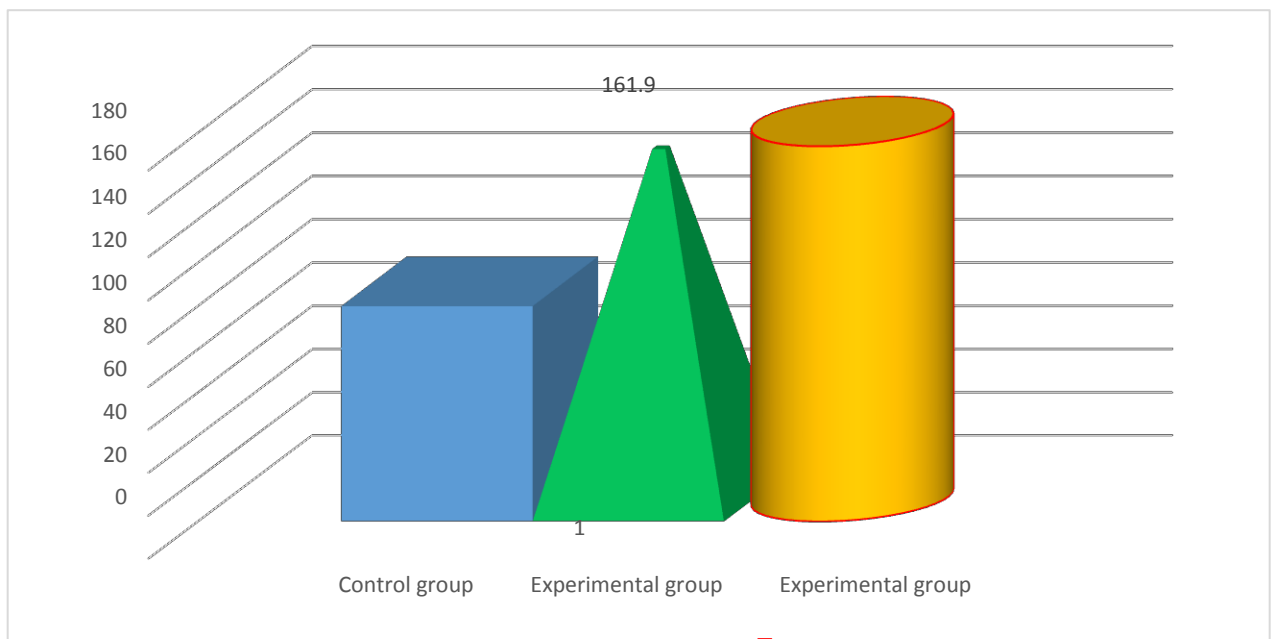


The effect of the studied compound on Na⁺ and K⁺ concentrations in blood and urine was studied. In the studied cumulative therapeutic (100mg/kg) doses, it has almost no effect on the concentrations of Na⁺ and K⁺ in the blood.

Table 3. Effect of dry extracts of tuberose and sedum on urinary excretion (M±m)

Groups	The amount of urine excreted		%
	until the drug is administered, (ml)	after injection, (ml)	
Control group	4,37 0,33	4,2 0,42	100
Experimental group		6,8 0,37*	161,9
Experimental group		7,3 0,7*	173,8

Note: *P< 0.05 vs. Control



The conclusion. The amount of Na⁺ and K⁺ in the blood of control and experimental group animals was 147 ± 3.11 152 ± 2.65 mmol/l and 4.85 ± 0.074 4.74 ± 0.33 mmol/l, respectively. At the same time, the concentration of Na⁺ ions in the urine increased (75.5 ± 2.48 mmol/l) compared to the control group (52.5 ± 1.63 mmol/l), and almost no change was noted in K⁺ concentrations..

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