

## STUDY OF ANTI-INFLAMMATORY PROPERTIES THICK EXTRACT OF THE LARGE BURDOCK LEAVES

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**Introduction.** The problem of pharmacological correction of inflammation, as before, remains an urgent problem of modern medicine. Nonsteroidal anti-inflammatory drugs (NSAIDs) are drugs of first choice for the treatment of inflammatory diseases of the musculoskeletal system. However, it should be determined that despite the undoubted clinical effectiveness, the use of NSAIDs is accompanied by serious side effects related to the mechanism of their action. In connection with the above, despite the diverse assortment of anti-inflammatory agents, there is a need for drugs to correct inflammation. The search for new drugs with an unconventional mechanism of action and minimal side effects is relevant and ongoing. Phytotherapy is one of the promising areas of creating safe and effective anti-inflammatory drugs.

Burdock is one of the plants traditionally used in folk medicine to treat inflammation. It is known that burdock leaves contain ascorbic acid, carotene, rutin, hyperoside, essential oil, mucilage, tannins. Analysis of the phytochemical composition of burdock leaves allows us to predict the presence of anti-inflammatory properties in this medicinal raw material.

**Aim of the study.** Experimental study of the antiexudative properties of a thick extract of the large burdock leaves.

**Materials and methods.** We studied the antiexudative properties of a thick extract of burdock leaves on a model of acute aseptic inflammation in rats - carrageenan edema.

The choice of the model is due to its informativeness, since at each stage of the development of inflammation, other things being equal, a certain group (or groups) of mediators participating in the development of the exudative reaction is of primary importance. Reference NSAIDs with a pronounced anti-inflammatory effect - diclofenac sodium and a plant-derived drug with proven anti-inflammatory activity - quercetin were selected as comparison drugs.

Acute aseptic inflammation was reproduced by introducing a 1% carrageenan solution in accordance with the methodological recommendations of the State Expert Center of the Ministry of Health of Ukraine for preclinical study of medicinal products. The phlogogenic agent was administered to rats subplantarily in a volume of 0.1 ml per animal 1 hour after the last administration of the studied drugs. The amount of paw edema in rats was measured using a mechanical oncometer according to A.S. Zakharevsky in dynamics: 1, 2, 3, 4, 5 and 6 hours after the introduction of carrageenan. The anti-exudative activity of the studied drugs in acute exudative inflammation was determined by the ability to reduce the development of edema in comparison with the control pathology group and was expressed as a percentage.

A thick extract of burdock leaves was administered intragastrically in doses of 25; 50 and 75 mg/kg, comparison drugs diclofenac sodium and quercetin - intragastrically

in doses of 8 mg/kg and 50 mg/kg, respectively. Control animals were injected with an equivalent amount of solvent. The drugs were administered prophylactically for 4 days before the reproduction of the model pathology, the last time - 1 hour before the induction of inflammation.

**Results and discussion.** The introduction of a carrageenan solution led to swelling of the hind limbs in experimental animals. Thus, in rats from the control pathology group, the paw volume increased 1.2 times after 1 hour, 1.6 times after 2 hours, 1.6 times after 3 hours, and 1.8 times after 4 hours. once, after 5 hours - 1.7 times, after 6 hours - 1.5 times. The maximum swelling was observed during 3, 4 and 5 hours and remained until the end of the study.

The introduction of the studied substances led to a significant reduction in the swelling of the limbs of the experimental animals. At 1 hour of the study, only the extract of burdock leaves at a dose of 25 mg/kg showed reliable antiexudative activity (28.5%). The activity of diclofenac sodium was 27.7%, but the changes in the volume of rat paws were not reliable. At the end of 2 hours, diclofenac sodium showed the greatest antiexudative activity (71.4%), the effect of burdock leaves extracts in doses of 25, 50 and 75 mg/kg was inferior to the effect of diclofenac (43.3%, 27.3% and 39.4%, respectively) .

At the end of the third hour, burdock leaves extract in all doses and both reference drugs showed a reliable anti-edematous effect. Diclofenac sodium was the most active, its antiexudative activity was 79.2%. Burdock leaves extract in doses of 25 and 50 mg/kg was somewhat inferior to it, the antiexudative effect was 57.8% and 45.9%, respectively. The anti-edema effect of burdock leaf extract at a dose of 75 mg/kg was equal to 38.2%.

During the next hour, sodium diclofenac also showed the maximum anti-edema effect (88.4%), the anti-edema effect of burdock leaves extract at a dose of 25 mg/kg was 76.5%, the effect of burdock leaves extract at a dose of 50 mg/kg was 49.9 %, in a dose of 75 mg/kg – 59.6% Quercetin showed the least activity (29.5%).

At five o'clock, a similar picture was observed. Diclofenac sodium showed maximum activity (78%), burdock leaves extract at a dose of 25 mg/kg was slightly inferior to diclofenac sodium, its activity was 67.2%. Burdock leaf extract in doses of 50 and 75 mg/kg at this time showed almost the same effect - 49.5% and 48.3%, respectively.

At the end of the study, burdock leaves extract at a dose of 25 mg/kg (71.1%) was the most active. Other drugs were inferior to it in anti-edema effect. The effect of diclofenac sodium was 59.1%, the effect of burdock leaves extracts in doses of 50 and 75 mg/kg was 29% and 37.6%, respectively. Quercetin did not show reliable anti-exudative activity.

The studied substances can be placed in the following series according to the average anti-exudative activity: diclofenac sodium (67.3%) > burdock leaves extract, 25 mg/kg (57.4%) > burdock leaves extract, 75 mg/kg (42.4%) ≥ burdock leaves extract, 50 mg/kg (37.1%) > quercetin (24.8%).

**Conclusions.** Burdock leaves extract at a dose of 25 mg/kg showed the greatest anti-edematous effect on the carrageenan edema model. This dose is conditionally effective in terms of anti-inflammatory activity and can be used in further studies.