

PHARMACOLOGICAL STUDIES OF THE INFLUENCE OF DICLOKOR ON ZYMOSAN-INDUCED PAW OEDEMA IN RATS

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Zymosan, which is a glucan with repeating glucose units connected by β -1,3-glycosidic linkages, is used to induce experimental sterile inflammation for further assessment of antiexudative action of a new drug. Zymosan inflammation is mostly leukotriene-mediated. Diclokor is a new drug, which is being developed by Borshagivskiy HFZ and containing 40 mg of quercetin and 25 mg of diclofenac.

The aim of this study was to assess the influence of Diclokor on zymosan-induced paw oedema in rats.

40 rats were divided into 4 experimental groups: group 1 – animals with control pathology; group 2 - animals receiving Diclokor at a dose of 17.8 mg/kg; group 3 - animals receiving quercetin at a dose of 11.0 mg/kg and group 4 - animals receiving Voltaren at a dose of 6.8 mg/kg. All drugs were administered orally in one dose 1 hour before induction of the pathology. Aseptic exudative inflammation was caused by subplantar injection of 0.1 ml of zymosan suspension in the right paw of the animals. The volume of oedema was measured by digital plethysmometer in dynamics in 0.5, 1, 2 and 3 hours after zymosan injection. Anti-inflammatory activity was expressed in percentages and measured by comparing the volumes of oedema in animals receiving test drugs and animals from the control group.

The results of the study showed that after 0.5, 1, 2 and 3 hours Diclokor had the most pronounced antiexudative activity (%), which equaled 35.6 ± 2.1 , 45.5 ± 2.7 , 32.3 ± 1.9 and 24.4 ± 1.5 , respectively. Corresponding figures for quercetin were 25.4 ± 1.5 , 33.2 ± 2.0 , 22.2 ± 1.3 and 19.6 ± 1.2 , and for Voltaren – 7.3 ± 0.3 , 14.8 ± 0.7 , 17.5 ± 0.8 and 10.1 ± 0.5 , respectively. Antiexudative activity of Diclokor was reliable in comparison with the control group and reliably higher than that of the reference drugs. The ability of quercetin to inhibit zymosan inflammation is due to its antileukotriene properties, which is consistent with the literature data. In this model, Voltaren had the lowest antiexudative activity.

Thus, Diclokor at a dose of 17.8 mg/kg exhibits a pronounced inhibiting effect on zymosan-induced paw edema in rats. This effect is due to the presence of quercetin in its composition, since quercetin inhibits lipoxygenase pathway of arachidonic acid metabolism, the mechanism responsible for the development of zymosan inflammation.