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# Determination of sialic acid level in blood serum of rats as marker of anti-inflammatory action of pharmaceutical composition containing piroxicam and caffeine

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Inflammatory diseases are one of the most common human pathologies. It is to be noted that nowadays young people, leading an active lifestyle, seek medical advice just as often as elder people. Young active people consult a doctor because pain and deformation in joints means incapacitation for them and results in decreasing of life quality.

Modern medicine has a wide range of anti-inflammatory medicinal products but persistent long-term use safety concerns must be considered when prescribing these medications for chronic and degenerative pain conditions. That's why search of new pharmaceutical compositions that suppress inflammation and have a low risk of adverse reactions is important today.

One of the promising trends in this search is a development of new pharmaceutical compositions on the base of non-steroidal anti-inflammatory drugs (NAID) with caffeine. Piroxicam is characterized by high efficiency and safety compared to other NAIDs and caffeine is known as adjuvant of NAIDs. Besides, pharmaceutical composition of piroxicam with caffeine is absent on the pharmaceutical market of Ukraine.

For that reason aim of this research was investigation of anti-inflammatory action of pharmaceutical composition containing piroxicam and caffeine compared to mono-preparation and reference drug – sodium diclofenac.

Anti-inflammatory action of studied preparations was analyzed using biochemical parameter – sialic acid (SA) level.

Biochemical investigations on the piroxicam, caffeine and their pharmaceutical composition by the side of reference drug sodium diclofenac were performed on rats of WAG line with the average weight 200 - 230 g. Animals were divided on 6 groups (6 rats per group).

Rats of 1 group were injected once perorally intragastrically with 3% starch mucus (2 ml per 200 g body weight). In 2 group formalin edema was simulated with sub-planetary injection of 2% formalin solution to the rat's posterior paw and animals were injected intragastrically with 3% starch mucus. Rats of 3 group were injected piroxicam (1.3 mg per 1 kg body weight); 4 group - caffeine (0.6 mg per 1 kg body weight) ; 5 group - composition of meloxicam with caffeine (1.3 mg/0.6 mg per 1 kg body weight); 6 group - (the reference one) - diclofenac sodium (8 mg per 1 kg body weight).

Content of SA was determined by Hess method.

Experimental study of anti-inflammatory effect showed that SA level in the blood of intact animals was 1.305±0.014 mmol/L, under the conditions of formalin-induced paw edema SI level increased – 2.862±0.021 mmol/L. It was shown that mono-administration of piroxicam under the formalin-induced paw edema resulted in downward trend of SA level (2.325±0.023 mmol/L). Mono-administration of caffeine decreased SA level 1.7 times compared to formalin-induced paw edema (1.543±0.024 mmol/L). Pharmaceutical composition containing piroxicam and caffeine was more effective – it decreased SA level 2 times in comparison with formalin-induced paw edema model. Investigated composition acted at a level of reference drug (1.421±0.004 mmol/L).

It was found that piroxicam and caffeine in composition effect the level of SI and have anti-inflammatory activity against the formalin edema compared to reference drug – sodium diclofenac.