

THE EFFECT OF CONVULVULUS ARVENSIS L. ON THE COURSE OF ADJUVANT ARTHRITIS IN WHITE RATS AFTER TOPICAL APPLICATION

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ABSTRACT This study examined the effect of a gel containing an extract of the plant *Convolvulus arvensis* on the course of adjuvant arthritis in white rats induced by Freund's adjuvant. It has been established that a gel containing *Convolvulus arvensis*, when applied externally, significantly suppresses the development of immunological inflammation. According to these indicators, it surpasses ibuprofen.

Keywords: Chronic inflammation, *Convolvulus arvensis*, ibuprofen, Freund's adjuvant.

INTRODUCTION

Rheumatic processes, the pathogenesis of which involves autoimmune inflammation of the connective tissue lining the joints, leading to persistent joint destruction, dysfunction, and, as a rule, difficult to treat [1]. Rheumatoid arthritis is characterized by a chronic persistent course, systemic manifestations, premature patient disability, and a high mortality rate [2, 1033; 3, 520; 4, 290]. In rheumatoid arthritis, systemic inflammation is accompanied by synovial tissue hyperplasia (proliferation and fibrosis of synovial cells), structural destruction of cartilage, bones, and ligaments. There is still no absolute clarity regarding the etiology and pathogenesis of the disease, and effective therapeutic agents have not been identified [5, 203]. The aim of this study was to investigate the effect of a gel containing an extract of *Convolvulus arvensis* (Field Bindweed) on the course of adjuvant arthritis.

MATERIALS AND METHODS

A gel containing an extract of *Convolvulus arvensis* was obtained at the Department of Polymer Chemistry of the National University of Uzbekistan under the supervision of Professor U.N. Musaev, Doctor of Chemical Sciences. The dry extract isolated from *Convolvulus arvensis* L. is a dark-colored powder with a specific odor and is highly soluble in water. The study was conducted on mature laboratory animals. Before the experiment, all animals were examined, weighed, and their age, sex, motor activity, and skin condition were recorded. The animals were divided into experimental and control groups of six individuals each. Before and during the experiments, laboratory animals were housed in a vivarium in plastic cages measuring 55 x 45 x 15 cm, with sawdust bedding, at a temperature of 20-25°C, with a humidity of at least 50%, in a well-ventilated room, and with day/night light. The daily feed requirement was calculated according to the age of the animals. The studies were conducted on 36 male albino rats from a mixed population weighing 170-185 g. The reference drug was a classic nonsteroidal anti-inflammatory drug, ibuprofen gel for topical use, 5% (50g). 100g of gel contains: ibuprofen 5.0g, excipients: isopropanol, hytellose, sodium hydroxide, benzyl alcohol, water. This compound was synthesized at the Department of Bioorganic and Biological Chemistry of the Tashkent Medical Academy and is a yellowish

RESULTS AND DISCUSSION

Manufacturer: Ozon LLC, Russia. The choice was based on the results of preliminary studies and numerous published data demonstrating high anti-inflammatory activity of these agents [6, 2]. Adjuvant-induced arthritis (AIA) is one of the first experimental models used to test pharmaceuticals designed to treat rheumatoid arthritis (RA). The study duration was 30 days in albino rats. The similarity between AIA and human RA includes limb edema, cartilage degradation, lymphocytic infiltration of inflamed joint tissue, loss of joint function, and bone and periosteum resorption [7, 498]. The AIA model in experiments involved the injection of 0.1 ml of AF containing dead mycobacteria suspended in oil into the right hind paw of rats [8, 33; 9, 23]. The adjuvant was administered into the tail and

one paw pad [10, 208], which induced an acute inflammatory reaction at the injection site and an immunological response that developed 9 days later in the contralateral paw and other organs. Hind paw swelling was monitored from the very first day (9 days from the onset of the disease to 15 or more days, depending on the duration of the experiment). In the first series of experiments, to study the prophylactic effect of the drugs after administration of complete AF, the animals were divided into several groups. One group received a gel containing *Convolvulus arvensis* L. extract, while the other group received ibuprofen gel once daily for 14 days. Paw volumes were measured using a water plethysmometer. The anti-inflammatory activity of the drugs was assessed by the difference in paw volumes before the start of the experiment and at the time of maximum edema. In the second series of experiments, similar studies were conducted to study the therapeutic effect of the drugs. Treatment with the above-mentioned drugs was conducted for days 15 to 28. An experimental model of rheumatoid arthritis in rats is similar in clinical course to chronic autoimmune joint inflammation in humans [8, 33; 9, 23; 11, 115]. The experimental model in rats is distinguished by its reliability, the rate of development of initial arthritis symptoms and the progression of manifestations of polyarthritis, bone resorption, and increased.

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