

Comparative Study of the Anti-inflammatory Effect of Ethanol Infusion from *Cotinus coggygia* Heartwood and the Flavonoid Fustin in a Rat Model of Carrageenan-induced Paw Edema

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Cotinus coggygia Scop. is a medicinal plant, rich in tannins and flavonoids. The main flavonoid in *C. coggygia* heartwood is fustin. Studies have shown that *C. coggygia* extracts and fustin exert anti-inflammatory action [1-2]. Carrageenan-induced paw edema in rats is a widely used model of acute inflammation. The aim of the present study was to compare the percent of inhibition of carrageenan-induced paw edema by 1/500 ethanol infusion from *C. coggygia* heartwood (EICCH) and fustin at doses 10 mg/kg and 20 mg/kg. Two experiments were performed. In the first experiment 16 male Wistar rats were allocated in two groups: Control and 1/500 EICCH. EICCH group was pretreated orally for 15 days with 10 ml/kg 1/500 EICCH (1 g heartwood in 500 ml 20% ethanol for 20 days extraction) and control animals received 20% ethanol. The second experiment was performed on 30 male Wistar rats allocated in three groups: Control, F10 and F20. Fustin was isolated from *C. coggygia* heartwood and purified by RP-HPLC [3]. Rats from F10 and F20 groups were pretreated for 10 days orally with fustin at doses of 10 mg/kg and 20 mg/kg, respectively. Distilled water was given to the Control group. After the pretreatment, 1 mg of carrageenan was administered subcutaneously in the left hind paw of the animals. Using a digital plethysmometer LE7500 (Panlab, Barcelona), paw volume (ml) was measured at 0, 30, 60, 120, 180, 240, and 300 minutes after the injection. The percent of inhibition of the paw edema was calculated. The results showed that the percent of inhibition of paw edema in rats treated with EICCH was 48.7%, 50.4%, 36.8%, 33.8%, 33% and 29.7% at the 30th, 60th, 120th, 180th, 240th and 300th min, respectively. In animals, treated with fustin at the dose 10 mg/kg, the percent of inhibition of the paw edema was 60.8%, 58.3%, 25.5%, 16.6%, 11.8% and 16.3% at the respective time points. The results of the group, treated with 20 mg/kg fustin, were respectively 47.8%, 44.4%, 4.3%, 15%, 19.6% and 0%. In the fustin experiment the most pronounced inhibition of paw edema occurred on the 30th min, being greater in animals treated with the dose of 10 mg/kg. In comparison, the animals pretreated with 1/500 EICCH demonstrated the greatest percent of inhibition on the 60th min. In conclusion, both ethanol infusion of *C. coggygia* heartwood and the flavonoid fustin, isolated from *C. coggygia* heartwood, demonstrated anti-inflammatory properties in carrageenan-induced paw edema and the effect is most significant between 30th and 60th minutes.

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