ANTI-INFLAMMATORY ACTIVITY OF *COUTAREA HEXANDRA*

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SUMMARY. *The crude ethanolic extract from the bark of the stem of* C. hexandra *was tested in two experimental models of inflammation in which it showed a significant anti-edematogenic action.*

Coutarea hexandra, a plant of the family of the Rubiaceae native to the Central and South America, is found all over Brazil and is popularly known as "falsa-quina", "quina-de-Pernambuco", or "quina-do-Brasil". The bark of the stem is utilized in the Brazilian folk medicine as anti-inflammatory and it has a positive action in the treatment of malaria and diabetes.

In the methanolic extract of the bark of the stem celotonine, an instable 4-arylcoumarin, was identified, whose stable 5,7,2',5'-tetraacetoxy derivative has shown a broncodilating action as well as an action against fungi and bacteria. [1] In this paper we report the anti-inflammatory action of the *C. hexandra* ethanolic extract on two experimental models of inflammation. [2, 3]

EXPERIMENTAL

Plant material. The bark of the stem of the *C. hexandra* was collected in September in Paulista, 40 km near Recife, Pernambuco, Brazil. The plant was authenticated and a specimen was deposited in the Herbarium of the Department of Antibiotics of the University of Pernambuco under the number 5663.

Extraction. Dried stem barks (800 g) were extracted with EtOH yielding 84.3 g of dry crude extract.

Carrageenan-induced paw oedema. This test was carried out according to the technique described by Winter *et al.* [3] using Wistar rats of both sexes (120-170 g). The rats were fasted the night before testing and divided into four groups of 5 animals each. On the next day, groups 1 and 2 received 500 and 1000 mg/kg, orally, of the crude extract in distilled water containing 0.1% Tween 80 + 0.5% ethanol. The reference group received orally 200 mg/kg of phenylbutazone in a suspension of 1% carboxymethylcellulose. The control group received, orally, the vehicle (H_2O+ethanol+Tween 80). One hour after oral administration, 0.1 ml of an aqueous suspension of 1% carrageenan was injected in the subplantar region

Treatment	Oral dosage mg/kg	No.	Increase of paw volume (ml) Mean ± S.E.M.	Oedema inhibition
Control	-	5	1.78 ± 0.13	-
C. hexandra extr.	500	5	1.26 ± 0.08	66*
C. hexandra extr.	1000	5	1.16 ± 0.16	82*
Phenylbutazone	200	5	1.34 ± 0.11	62*

* $p<0.05$ *vs* controls

Table 1 - Effect of *C. hexandra* and phenylbutazone on carrageenan-induced odema in the paw of rats.

Treatment	Oral dosage mg/kg	No.	Abscess wet weight (g) Mean ± S.E.M.	Inhibition (%)
Control	-	5	1.21 ± 0.18	-
C. hexandra extr.	500	5	0.72 ± 0.20	40.3*
C. hexandra extr.	1000	5	0.62 ± 0.25	48.3*
Phenylbutazone	200	5	0.71 ± 0.21	41.0*

* $p<0.05$ *vs* controls

Table 2 - Effect of *C. hexandra* and phenylbutazone on carrageenan-induced abscess.

of the right hind paw of all rats. The volume of both hind paw was registered before and 4 h after the injection of the carrageenan. The relative increase of volume of the paws of the groups was compared to that of the control group and the reference group using the Student's t test. The percent inhibition of inflammation after 4 h was calculated after the method of Newbould. [4]

Carrageenan-induced abscess. The method described by Benitz and Hall [4] consists of the induction of a subcutaneous abscess at the tail root in the mid-line of the back of the rats. Utilizing the same general scheme of grouping and dosage above described, animals were injected with 0.5 ml of a sterile suspension of 5% carrageenan in distilled water. Twenty four hours later an abscess was well developed and could be easily dissected out. In the test groups, the *C. hexandra* was administered immediately before carrageenan and 6 h later. Twenty four hours after the administration of the carrageenan, the abscess was dissected out and weighed. The wet weight was then compared for the four groups using the Student's t test.

RESULTS AND DISCUSSION

The dry ethanolic extract of *C. hexandra* demonstrated a significant anti-edematogenic action of 66 and 82% in the dosage of 500 and 1000 mg/kg, respectively, 4 h after the pedal injection of carrageenan (Table 1). This time after carrageenan pedal injection corresponds to the second phase of inflammation which is correlated with the appearance of prostaglandins and kinins according to Van Arman and Bohidar. [5] The dry ethanolic extract of *C. hexandra* at a dosage of 1000 mg/kg produced an inhibition of 48.3% in the weight of the carrageenan-induced abscess, whereas phenylbutazone at the same dose yielded an inhibition of 41% (Table 2). The dry ethanolic extract of *C. hexandra* in this preliminary study produced a significant anti-inflammatory action in both the experimental models: therefore, these results support further investigations.

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