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ANTINOCICEPTIVE, ANTICONVULSANT AND ANTI-INFLAMMATORY ACTIVITIES OF ZIZYPHUS JUJUBA

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ABSTRACT: *The alcoholic extract of the bark of Zizyphus jujuba possesses antinociceptive, anticonvulsand and anti-inflammatory activities. The CNS depressant activity of the plant might be responsible, to some extent for these activities.*

INTRODUCTION

Zizyphus jujube Lam. (Family : Rhamnaceae) a small tree is distributed through-out India and in outer Himalayas upto 4500 ft. In Indian system of medicine, the plant is considered as remedy in diarrhea, old wounds and ulcers and used to purify the blood and aid digestion[1]. Pharmacological studies performed with *Zizyphus jujube* seeds exhibited central nervous system depressant activity[2].

The fruits from Chinese *Z. jujube* showed hypotensive diuretic and anti-inflammatory actions[3]. In view of the above reported activities, the present study was conduced on the alcoholic extract of the bark of the above plant.

METHODS AND MATERIALS

Z. jujube bark collected from Varanasi district, U.P. was powdered and extracted with alcohol (90%) at room temperature. Solvent was evaporated to dryness to yield a brown gummy mass (Zj). A suspension of Zj was made in distilled water and was administered in graded doses (200 – 1000 mg/kg body weight) intraperitoneally (i.p) in albino mice of either sex (15 – 30g) and 24 hour mortality was noted. Zj did not produced any mortality upto a dose of 100 mg/kg, i.p.

RESULTS AND DISCUSSION

Antiinoceptive activity of Zj was determined in albino rats, of either sex (100 – 150 g), by radiant heat rat tail hot wire technique using a Techno analgesiometer. The increase in the latent period of tail flick response was taken as the index of antinociception and was determined at 15 minutes intervals for 1 hour after different treatments. As shown in the table Zj (200 mg/kg, ip) produced significant antinociceptive activity 1 hour after Zj administration.

Anticonvulsant activity of Zj was determined against supramaximal electroshock seizure in albino rats of either sex (100 – 150 g). The hind limb extensor responses were taken as a positive test for supramaximal electroshock seizure. Pretreatment with Zj (200 mg/kg, ip, 1 hour) and phenobarbitone (20 mg/kg, ip, 1 hour) significantly protected in the animals against electroshock induced convulsions by 50%

(P<0.05, n = 10) and 100 % (P <0.001, n = 20), respectively.

Anti-inflammatory activity of Zj was determined against pedal oedema produced by supplanter injection of 1% carrageenin in saline. Increase in the pedal oedema was measured 3 hour after carrageenin administration by mercury displacement method plethysmographically. The extent of pedal oedema produced by administration of carrageening in Zj (200 mg/kg. ip 1 hour) pretreated animals was significantly less (0.9 ± 0.2, n = 5, P < 0.01) as compared to vehicle pretreated group (1.77 ± 0.12, n=6). Pretreatment with hydrocortisone (20 mg/kg, ip, 1 hour), a known anti-inflammatory drug, also produced significant inhibition of carrageenin induced pedal oedema by 49%.

Pentobarbitone (50 mg/kg, ip) induced sleeping time in albino mice of male sex (15 – 30 g) was significantly more (118.8 ± 17.8 min, P<0.025, n=5) in Zj pretreated animals (100 mg/kg, ip, 1 hour) as compared to vehicle pretreated group (52.8 + 14.5 min, n = 5) suggesting that Zj might possess contral nervous system (CNS) depressant activity.

In conclusion, the results of our present study suggest that alcoholic extract of the bark of *Z. jujube* possesses antinociceptive, anticonvulsant and anti inflammatory properties. The CNS depressant activity of the plant might be responsible, to some extent, for these activities.

TABLE

Effect of vehicle (0.5 ml/rat, ip), Zj (200 mg/kg, ip) and morphine (10 mg/kg, ip) treatment of latent period of tail flick response in albino rats.

Groups	Number of observations	Change in latent period (seconds) of tail flick (Mean ± S.E) response			
		15 min	30 min	45 min	60 min
Vehicle	5	+1.2 ± 0.39	+0.0 ± 0.79	+1.8 ± 0.98	+1.6 ± 0.83
Zj	10	+18.8 ± 2.33**	+ 21.0 ± 1.6 ***	+ 18.8 ± 2.67 **	+17.2 ± 2.49 **

Statistical significance by paired 't' test
* P less than 0.05 ** P less than 0.01 and *** P less than 0.001

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