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ANTI-INFLAMMATORY ACTIVIY OF *PREMNA TOMENTOSA* WILLD. IN ALBINO RATS

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ABSTRACT: *An alcoholic extract of the leaves of Premna tomentosa Willd at a dose of 100 mg/kg body weight exhibited significant anti-inflammatory activity in albino rats. The extract caused reduction in the weight of spleen, thymus and adrenals. It reduced cotton pellet granuloma by 32.21%. The serum biochemical parameters showed reduction in protein, acid phosphatase and transaminases. The activity of P. tomentosa was comparable to phenylbutazone.*

INTRODUCTION

Premna tomentosa Willd of the verbenaceae is used in the preparation of the siddha medicine Pidanganari kudineer, a specific for liver and spleen enlargement. (1) The leaves of P. tomentosa posses diuretic properties and are used in dropaical affections, a decoction is given after child birth and pounded leaves are said to possess vulnery properties. An extract of the inner bark is used to arrest diarrhoea and the decoction of the roots is given in stomach ache. The roots yield an aromatic oil which is also used in stomach disorder (2).

The leaves on steam distillation yield a light, yellow essential oil with a pleasing odour and burning taste (2). The heart wood gave a 6, 8-di-C-glycoside favone $C_{26}H_{28}O_{14}$(3).

The alcoholic extract of leaves is screened for anti-inflammatory activity in albino rats.

MATERIALS AND METHODS

The leaves of *P. tomentosa* Willd. Were collected from Guduvancheri in Tamilnadu State. The shade dried leaves were coarsely powdered and were steeped in ethyl alcohol for 3 days. The alcohol was removed from the extract by distillation and was dried over water bath followed by vaccum. The yield of drug extract was 15.3%.

The extract was screened for anti-inflammatory activity by the method of Winter and Porter (4) with modifications as follows. Cotton pellets weighing 100 mg ± 1 were prepared and sterilized in hot air oven at 120^0C for 3 hours. Adult male rats of Wistar strain weighing 150-200g were chosen from the Institute's animal colony and were divided into four groups of ten animals each. All the animals of the 2nd, 3rd and 4th groups were implanted with cotton pellets subcutaneously, two in the axillae and two in the groin under light ether anesthesia.

The 1st group without implantation of cotton pellets served as normal control and the 2nd group as inflammatory control. The 3rd and 4th groups were administered phenyl

butazone and *P.tomentosa* extract both suspended in olive oil at a dose of 100 mg / kg body weight respectively for seven days from the day of implanting the pellets. The animals had free access to drinking water, Hindustan Lever rat feed, cabbage and Bengal gram. On the 8^{th} day all the animals were sacrificed, the pellets dissected out, cleaned from the adhering tissues and dried in hot air over at 70^0C over night to constant weight. Thymus, spleen and adrenals were dissected out, blotted and weighed.

Blood was drawn into glass syringes by direct puncture of heart and was centrifuged at 3000 rpm for 15 minutes to separate the serum. The serum was used for the estimation of acid phosphatase, glutamate pyruvate transaminase (GPT), glutamate oxaloacetate transaminase (GOT) and protein as described earlier (5). Adrenal ascorbic acid was estimated by the method of Roe and Kuether (6).

Student's 't' test was applied for the statistical analysis of data.

RESULTS AND DISCUSSION

P. tomentosa extract caused reduction in the weight of spleen, thymus and adrenals. The reduction in cotton pellet granuloma formation was 32.21% whereas phenylbutazone reduced granuloma by 33.77% (Table-1).

The serum biochemical profiles revealed significant reduction in protein and the activities of acid phosphotase, GOT & GPT. Phenyl butazone also showed similar effect (Table-2).

During inflammation prostaglandin and prostaglandin like materials are released from spleen (7). The significant reduction in the weight of spleen and thymus indicate the retardation in the release of these principles. Further, during inflammation Bradykini and other types of kinins are released into the blood. The lowering of serum protein and reduction of transaminases indicate the inhibition in the synthesis of peptides (8). There was also stablisation of lysosomal membrane as reflected by the reduced acid phosphatase activity (9,10). These biochemical observations suggest that the anti-inflammatory activity of *P.tomentosa* is comparable to that of phenyl butzaone.

Table 1
Effect of *P.tomentosa* on organ weights, adrenal ascorbic acid and granuloma weight (Values are mean ± SD)

Status	Spleen g/100g	Thymus g/100g	Adrenals g/100g	Adrenal ascorbic acid mg/g	Granuloma weight mg.	% reduction in granuloma weight
Normal control	0.245 ± 0.022	0.054 ± 0.0076	0.024 ± 0.002	2.254 ± 0.269	----	----
Inflammatory control	0.334 ± 0.033	0.055 ± 0.010	0.026 ± 0.004	1.532 ± 0.312	46.63 ± 5.68	----
Phenylbutazone	0.233[a] ± 0.021	0.050 ± 0.018	0.027 ± 0.002	1.301 ± 0.175	30.88a ± 4.26	33.77
P. tomentosa	0.226[a] ± 0.034	0.0364[a] ± 0.0064	0.022[b] ± 0.001	1.951 ± 0.201	31.61[a] ± 1.32	32.21

Values significant when $p < 0.05$
P values [a]P <0.001; [b]P <0.02

Table 1
Effect of *P.tomentosa* on serum biochemical parameters (Values are mean ± SD)

Status	Protein mg/100ml	Acid phosphatase mag phenol 100ml in 60 mts at 37^0C	GPT MG PYRUVATE / 100ml	GOT mg Pyruvate/100ml in 60mts at 37^0C
Normal control	8833 ± 480	3.46 ± 1.35	16.50 ± 2.01	23.4 ± 1.3
Inflammatory control	9833 ± 367	5.05 ± 0.54	19.75 ± 2.52	18.0 ± 1.41
Phenylbutazone	7700[a] ± 982	2.30[a] ± 0.31	7.91[a] ± 0.66	11.2[a] ± 1.09
P. tomentosa	4760[a] ± 328	3.76[b] ± 0.30	8.37[a] ± 1.65	11.5[b] ± 2.64

Values significant when $p < 0.05$
P values [a]P <0.001; [b]P <0.01

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