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# STIMULATORY ACTIVITY OF BARK EXTRACTS OF *ANTHOCEPHALUS INDICUS* ON PROTEIN PROFILE IN ALBINO RATS

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## ABSTRACT

This study was designed to investigate, stimulatory effect of *Anthocephalus indicus* (Family: Rubiaceae) alcoholic bark extract on protein profile (e.g. total protein, albumin, total globulins and A/G ratio) in albino rat. Male albino rats were administered with bark extract of *Anthocephalus indicus* at the dose of 50 mg/kg body weight for 7, 15, 30, and 60 days showed significantly increase in serum total protein ( $P<0.001$ ), albumin ( $P<0.01$ ), total globulins ( $P<0.001$ ) and A/G ratio ( $P<0.05$ ). These data suggest that the anabolic activity of alcoholic bark extract of *Anthocephalus indicus*.

**Key Words:** *Anthocephalus indicus*, protein profile

## INTRODUCTION

*Anthocephalus indicus* (Family: Rubiaceae, Hindi name: Kadamba) is bitter, pungent and astringent in taste, pungent in the post digestive effect and has cold potency. It alleviates all the three dosas, predominantly kapha and pitta. It possesses light and dry attributes. By its special potency, it acts as vedanasthapana – analgesic and visaghna – detoxifies the toxins. The roots, fruits, leaves, bark skin is used from medicinal purposes. The decoction of the leaves is also used for this purpose. The paste of its bark skin is benevolent in conjunctivitis, as an external application. Internally, the decoction of bark skin is an effective remedy for diarrhea, dysentery and colitis. The juice of bark skin combined with cumin seeds and sugar alleviates vomiting. The excessive thirst in fevers is quenched with its fruit juice (Umachigi *et al.* 2007). Kadamba is the best panacea for raktapitta, edema and cough. The decoction of roots is salutary in urinary ailments like dysuria,

urinary calculi and glycosuria (Chandra and Gupta, 1980). Therefore, the present study was designed to investigate the anabolic activity of *A. indicus* bark extract on protein profile in albino rats.

## MATERIALS AND METHODS

**Experimental animals:** Twenty five male albino rats were acclimatized for two month prior to experiment. Healthy and adult rats of both sexes of almost equal size and weight ranging from 100-120g were kept in polypropylene cages measuring 90x60x30 cms at temperature  $27\pm 5^{\circ}\text{C}$ , relative humidity  $65\pm 10\%$  and photoperiod 12 hrs /day. The rats were fed on Gold Molar brand rat feed manufactured by Lipton India Ltd. Mumbai and water was provided *ad libitum*.

**Plant material and Extract:** The root bark of the *Anthocephalus Indicus* was collected from Sarmathura town Dholpur (Rajasthan) India. The root bark clean properly and morphologically

identified by the Department of Botany, School of Life Sciences Khandari, Agra. The 250 grin of bark was extracted with 500 ml of ethanol and kept in magnetic stirrer for 48 hours at room temperature. After it the solution was filtered by Whatmann no.1 filter paper and kept in lyophilize for 48 hours and obtain material was stored at room temperature (25°C). The residue was re-extracted with distilled water for experiments.

**Dosage regimen:**-The dose for the entire research was 50mg/kg body weight given to experimental rats. The doses were given once in a day for 7, 15, 30, and 60 days respectively.

**Experimental protocol:** All the rats were divided in to six groups of five rats each.

**1.Group-I:** Treated as control groups provide starch.

**2.Groups-II:**The remaining four experimental groups treated with 50 mg/ kg b.wt. of ethanol bark extract of *Anthocephalus indicus*.

**Serum separation:** After the conclusion of experiment, the animals were subjected to overnight fasting and killed under mild anesthesia. Blood was withdrawn from retro-orbital sinus using glass capillary in plain vials. The blood was centrifuged and the serum was separated for lipid biochemistry.

**Protein Biochemical analysis:** Serum total protein was estimated by biurate method (Lubram, 1978); while albumin and total globulins was determined by the method of Savory and Hammond (1980).

**Statistical analysis:** All results are

expressed as Mean  $\pm$  S.Em. (standard error of mean) for a given number of observations(n). Groups of Data were compared statistically using Dunnett's multiple comparison test (DMCT) and performed calculation by KpKy plot (ver.3.0) computer statistical software. Results were considered significantly at ( $P<0.05$ ).

## RESULTS AND DISCUSSION

In the present study a significantly changes in serum protein profile *viz.* total protein, albumin, total globulins and A/G ratio in albino rats were observed after 7, 15, 30, and 60 days .Oral Administration of alcoholic bark extract of *Anthocephalus indicus* which shows the anabolic effects with improvement in serum total protein, albumin, Total globulins and A/G ratio in treated rats and compared to the controls (Table -1).

In the present study, total protein increased significantly after oral administration of alcoholic bark extract of *Anthocephalus indicus* in rats due to increase in number of m-RNA molecules and the attachment to the ribosomes and thus increases protein anabolism. Similar findings have also been reported by Kumar *et al.* (2008) in hyperlipidemic rats after oral administration of root extract of *Anthocephalus indicus* enhanced protein anabolism. Serum albumin and total globulins was increased after oral administration of alcoholic extract of *Anthocephalus indicus* in rats and due to increase in albumin synthesis in liver in response to increased availability of amino acids provided by portal blood. Total globulins increased due to bark extract act on reticuloendothelial system and the liver

**Table-1**  
Effect of bark extract of *Anthocephalus indicus* on serum protein profile in hyperlipidemic rats

Lipid profile	Control groups	Treated groups with alcoholic bark extract of <i>A. indicus</i> (50 mg/kg b.wt.)			
		7 days	15 days	30 days	60 days
Total protein	5.20 $\pm$ 0.17	5.35 $\pm$ 0.12 <sup>ns</sup>	5.60 $\pm$ 0.09*	6.20 $\pm$ 0.09**	7.10 $\pm$ 0.20**
Albumin	2.00 $\pm$ 0.06	2.25 $\pm$ 0.10 <sup>ns</sup>	2.50 $\pm$ 0.09*	2.73 $\pm$ 0.08**	3.20 $\pm$ 0.13***
Total globulins	1.80 $\pm$ 0.08	1.95 $\pm$ 0.05*	2.18 $\pm$ 0.12**	2.35 $\pm$ 0.69***	2.70 $\pm$ 0.07***
A/G ratio	1.11 $\pm$ 0.03	1.15 $\pm$ 0.06 <sup>ns</sup>	1.16 $\pm$ 0.07 <sup>ns</sup>	1.16 $\pm$ 0.03 <sup>ns</sup>	1.18 $\pm$ 0.02*

Values are mean  $\pm$  SEM; n = 5 in each group. The protein profiles are given in gm/dl.

Non significant ( $P>0.05$ )<sup>ns</sup>; significant ( $P<0.05$ )\*; highly significant ( $P<0.01$ )\*\* and very highly significant ( $P<0.001$ )\*\*\*

metabolism (McPherson, 1984).A/G ratio was increased after oral administration of bark extract of *A. indicus* and correlated with an increased albumin and total globulins. Similar results have been reported by Kapil *et al.*(1995) in rats hepatoprotective effect of root extract of *A. kadamba* on protein metabolism and improve hepatic function.

In conclusion, the results of the present study focused health promotive properties of *Anthocephalus indicus* bark extract, which indicate prevent the loss of function of various organs of the body may be occurs due to the wear and tear of body tissues.

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