

## ANTIVENOM ACTIVITIES OF SOME SPECIES OF *ANDROGRAPHIS WALL*

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**ABSTRACT:** Antivenom activities of the alcoholic extracts of three species of *Andrographis wall*, were measured at a concentration of 10,25,50,75 and 100 µg/ml by *in vitro* assay of HRBC membrane lysis. All the extracts were found to be effective in the inhibition of *in vitro* HRBC lysis. The maximum antivenom activity was found in the alcoholic extract of *Andrographis paniculata* Nees.

### INTRODUCTION

*Andrographis paniculata* Nees, *Andrographis alata* Nees, and *Andrographis lineate* Nees are perennial herbs belonging to the family Acanthaceae and grow wildly throughout the plains and hills of India and Ceylon. *A. paniculata* is well reputed under the name *Kalmegh* as a common bitter tonic prescribed for children in liver troubles (Kirtikar and Basu, 1935). It has earned recognition in the Indian Pharmacopoeia. *A. paniculata*, *A. alata*, and *A. lineata* are used by traditional medical practitioners as stomachic, anthelmintic, anti-inflammatory, antipyretic, antiperiodic and in intermittent and remittent fevers (Chopra *et al.*, 1956; Anonymous, 1948; Balu and Alagesaboopathi., 1993; Balu *et al.*, 1993; Kirtikar and Basu., 1975; Tomar *et al.*, 1982). These plants are also used in snake bites by local traditional medicine men. The present investigation was undertaken to study the antivenom activities of the alcoholic extracts of *A. paniculata*, *A. alata* and *A. lineate* in haemolysis.

### MATERIALS AND METHODS

Leaf samples of *A. paniculata*, *A. alata* and *A. lineate* collected during their pre-flowering period were dried in shade; powdered and subjected to soxhlet extraction for 12 hours using 50 percent ethyl alcohol. The extracts obtained were subjected to solvent evaporation by vacuum distillation and dried in a desiccator.

The hyposaline-induced haemolysis was evaluated *in vitro* by the method of Roelofsen *et al.*, (1971). Blood was collected from healthy adult, human volunteers in sterile Alsever's solution and used within 5 hours of its collection. The preparation of cell suspension was carried out as described by Murugesh *et al.*, (1981). Hyposaline (0.36%, 2ml) phosphate buffer (0.15 m, pH 7.4, 1 ml) and HRBC (1%, 0.5ml) were taken in various tubes. To the above tubes different concentrations of the drugs were added. The drugs were prepared using isosaline. The tube containing isosaline (0.85%) served as control. All the tubes were incubated at 37°C for 30 minutes

and centrifuged. The colour of the supernatant (due to haemoglobin release) was measured at 560 nm. The control was taken as 100 per cent lysis and the percentage of prevention of haemolysis of the drug was calculated using the relation

Reading of treated sample  
\_\_\_\_\_ X 100

Reading of the control

## RESULTS AND DISCUSSION

Antivenom properties of *A. paniculata*, *A. alata*, *A. lineate* were assessed through inhibition of *in vitro* HRBC lysis and the results are presented in Table – 1. Snake bite causes haemolysis which is one of the

contributing factors of snake poison. Snake venom contains an enzyme phospholipase A2 (Rosenberg, 1979). The enzyme phospholipase A2 acts on membrane associated phospholipids liberating lysolecithin. Lysolecithin acts on the membrane of HBRC (Human Red Blood Corpuscles) causing haemolysis (Maeno *et al.*, 1962). In the present work *in vitro* HBRC membrane stabilization properties of the extracts of *A. alata*, *A. lineate* and *A. paniculata* were studied. The *in vitro* assay of *A. alata*, *A. lineate* and *A. paniculata* inhibit the hypotonicity induced HRBC membrane lysis by 53.6, 53.8 and 67.2 per cent respectively at a concentration of 10 µg / ml of the extracts. Among the three drugs the alcoholic extract of *A. paniculata* showed the maximum activity.

**TABLE -1**

**ANTIVENOM ACTIVITIES OF SOME SPECIES OF ANDROGRAPHIS WALL.  
(Inhibition of *in vitro* HRBC lysis)**

No.	Group	Concentration µg/ml	Haemoglobin Released 30 min (OD unit)	Inhibition of Haemolysis (%)
1	CONTROL	-	1.927	0
2.	<i>A. paniculata</i>	10	0.631	67.2
		25	0.682	64.6
		50	0.986	48.8
		75	0.674	65.0
		100	0.895	53.5
3.	<i>A. alata</i>	10	0.893	53.6
		25	1.664	13.6
		50	1.975	49.4
		75	1.199	37.7
		100	1.234	35.9
4.	<i>A. lineate</i>	10	0.889	53.8
		25	1.225	36.4
		50	1.361	29.3
		75	1.361	29.3
		100	1.080	43.9

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