Elucidation of immunomodulatory potential of methanol extracts of *Loranthus micranthus* leaves from two host plants: *Pisidium guajava* and *Parkia biglobosa*

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INTRODUCTION

Immunomodulators help to maintain immune-system homeostasis, thereby acting as prophylactic and immunotherapeutic agents for several diseases.

The increasing side effects associated with the use of synthetic immunomodulators have necessitated the search for an alternative remedy.

This study investigated the immunomodulatory potential of the methanol extracts of epiphytic *Loranthus micranthus* from two host plants: *Pisidium guajava* and *Parkia biglobosa.*

METHODS

The phytochemicals, cell-mediated, and humoral immune responses of *L. micranthus* extracts from *psidium Guajava* (**extract A**) and *Parkia biglobosa* (**extract B**) were determined using standard methods.

Data obtained were analyzed using the statistical software program statistical product and service solutions (SPSS) for windows version 23 (SPSS Inc., Chicago, IL, USA).

RESULTS

Table 1: Quantitative Phytochemical Composition of Methanol Extract of *L. micranthus* Leaf

Phytochemicals (mg/l00g)	Mean ± SD (Extract A)	Mean ± SD (Extract B)
Steroid	4.44 ± 0.003	4.43 ± 0.005
Tannin	2.87 ± 0.003	1.97 ± 0.003
Soluble carbohydrates	0.96 ± 0.004	1.43 ± 0.002
Cyanogenic glycoside	0.07 ± 0.004	0.05 ± 0.002
Saponin	2.03 ± 0.004	1.22 ± 0.002
Reducing sugar	5.65 ± 0.003	4.31 ± 0.003
Glycoside	1.19 ± 0.003	0.99 ± 0.002
Flavonoids	5.36 ± 0.003	4.79 ± 0.003
Alkaloid	13.39 ± 0.009	11.35 ± 0.002
Terpenoids	0.49 ± 0.003	0.48 ± 0.00 1

Values represent mean ± standard deviation of n = 3

Table 2: Effects of extract A *of L. micranthus* leaf on *in vivo* leukocyte migration in mice

Dose Treatment (mg/kg)		TLC	Differential leucocyte mobilization (%)				
			N	E	M	B	L
1	-	4125 ± 47.87	17.75	.75	-	-	81.50
2	100	8037 ± 23.94	21.50	.75	-	.57	77.25
3	250	9087 ± 42.70	23.50	.50	-	.50	79.25
4	500	7025 ± 47.87	22.25	.50	-	.50	74.75
5	25	5687 ± 59.07	28.25	.25	-	.50	71.25

Key: Group 1 mice was treated with 3% Tween 20 solution and served as the control, groups 2-4 were treated with 100, 250 and 500 mg/kg of extract respectively while group 5 was given 25mg/kg b. w of levamisole (standard drug).

Table 3: Effects of extract B *of L. micranthus* leaf on *in vivo* leukocyte migration in mice

Dose Treatment (mg/kg))		TLC	Differential leucocyte mobilization (%)				
			N	E	M	B	L
1	-	4125 ± 47.87	17.75	.75	-	-	81.50
2	100	6000 ± 45.64	24.25	-	-	.27	73.75
3	250	7075 ± 47.87	25.75	.25	-	.25	75.50
4	500	6037 ± 23.94	25.25	.75	-	.50	73.00
5	25	5687 ± 59.07	28.25	.40	-	.25	71.25

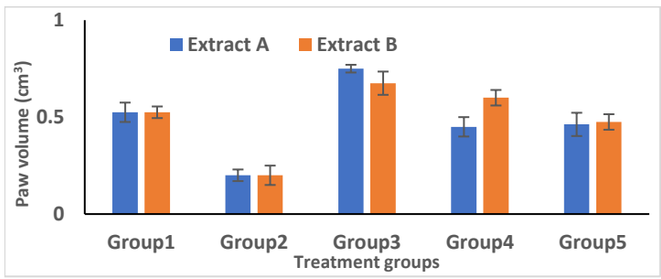

Figure 1: Effect of the Extracts of *L. micranthus* leaf on Cell Mediated Immunity

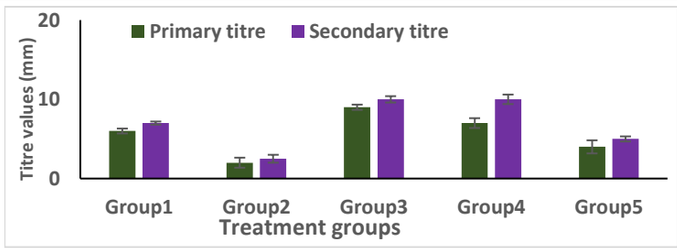

Figure 2: Effects of Extract A on Humoral Immunity

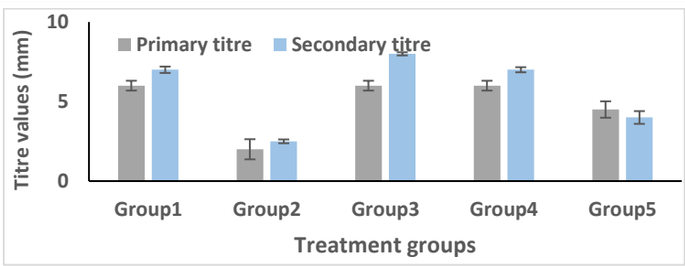

Figure 3: Effects of Extract B on Humoral Immunity

CONCLUSIONS

The extracts elicited a significant ($P < 0.05$) increase in total leukocyte counts and cell-mediated immunity compared with the control. The extracts treated groups just like the standard drug. levamisole also had an increase in the primary titer values of antibodies when compared to the control. This suggests that the high abundance of immunomodulatory phytoconstituents present in extracts of *Loranthus micranthus* restore and boost the immune system, hence could be employed as a pharmaceutical agent in the discovery of immunomodulators.

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The 7th International Electronic Conference on Medicinal Chemistry
01–30 NOVEMBER 2021 | ONLINE