

THREE NEW SEED LECTINS OF PHASEOLUS L. SPECIES SHOWING SPECIFICITIES  
WITHIN THE ABO BLOOD GROUP SYSTEM

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Relatively few lectins are sufficiently reliable for use in routine blood grouping. Since the publication of the anti-A specificity of *P. lunatus* L. lectin (Boyd & Reguera, 1949), scant attention has been given to the haemagglutinating characteristics of other *Phaseolus* spp. The haemagglutinating reactions of *P. trilobus* Ait. (= *Vigna trilobata* (L.) Verdcourt), *P. leucanthus* Piper and *P. polystachios* (L.) BSP lectins, which appear to have potential value in ABO blood grouping, are reported here pending trials in a serology laboratory.

Seed extracts (1:5 w/v in 0.9% saline) were prepared at below 10°C by maceration in a homogeniser and centrifuging to clarify. Complete (saline) agglutinins were detected by a centrifugally accelerated procedure (Toms, 1967) which was also applied with RBC suspended in human AB serum. Agglutination in albumin medium was assessed by the replacement technique of Dunsford & Bowley (1967). The seed extracts were also tested against ficinised, papainised and trypsinised RBC suspensions, each prepared and used according to Dunsford & Bowley (1967). Additionally, each protease test was followed immediately by the albumin replacement technique on the same seed extract/enzyme-treated RBC mixture. Appropriate positive and negative controls were included throughout. Titrations were performed by the method of two-fold serial dilutions. Titre (T) is expressed as the denominator of the extract dilution before admixture with the RBC suspension. There were no inconsistencies of result between different donor specimens of a given blood group. A suitable RBC panel enabled the lectins to be classified as non-haemagglutinating (Neg.), non-specific (N.S.), anti-A,B (a,b), anti-A (a) or anti-A<sub>1</sub> (a<sub>1</sub>). No anti-B specificity was detected in the above-mentioned tests, but *P. leucanthus* extract became anti-B specific in the presence of N-acetyl-D-galactosamine. In dilutions at which blood group specificity was evident, none of these lectins reacted by the saline or albumin technique with any of the following antigens:- C, c, D, E, e, M, N, S, s, P<sub>1</sub>, Le<sup>a</sup>, Le<sup>b</sup>, K<sup>a</sup>, K<sup>b</sup>, Fy<sup>a</sup>, Jk<sup>a</sup>, Jk<sup>b</sup>. The changes in lectin classification (C) under various test conditions and the corresponding titres (T) are shown in the table.

Species	Saline		Albumin		Serum		Enzyme-treated RBC			
	C	T	C	T	C	T	Saline		Albumin	
	C	T	C	T	C	T	C	T	C	T
<i>P. trilobus</i>	Neg.	-	N.S.	2	Neg.	-	N.S.	1	N.S.	4
Two batches			a <sub>1</sub>	32					a,b	8
									a <sub>1</sub>	32
<i>P. leucanthus</i>	a,b	32	N.S.	16	a,b	1	a,b	32	N.S.	16
Two batches	a	128	a,b	32	a	64	a	128	a,b	32
			a	4096					a	4096
<i>P. polystachios</i>										
Seed up to	a	16	a	64	a	2	N.S.	4	N.S.	128
2 years old							a	256	a	512
35 year old seed	Neg.	-	a	16	Neg.	-	N.S.	16	N.S.	32
							a	32	a	64

Of the several possible uses, the most probable application of *P. trilobus* lectin is as an albumin anti-A<sub>1</sub> agglutinin, of *P. leucanthus* lectin as a saline anti-A,B agglutinin or an anti-B agglutinin in the presence of the A-inhibitory sugar and of *P. polystachios* lectin as a saline anti-A agglutinin. The use of aged *P. polystachios* seed is contra-indicated.

Boyd, W.C. & Reguera, R.M. (1949). *J. Immunol.*, 62, 333-339.

Dunsford, I. & Bowley, C.C. (1967). *Techniques in Blood Grouping*, 2nd Edn., Vol. II, pp.279-280, 282-283; Oliver & Boyd, Edinburgh.

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