

Table of Lectin Properties

Lectin	Common Abbreviation	Source	Mol. Wt. (kDa)	Number of Subunits	pI	ϵ 0.1% 280 nm	Glycoprotein	Metal Ions Present
<i>Aleuria aurantia</i>	AAL	<i>Aleuria aurantia</i> mushrooms	72	2	9	2.97	No	--
<i>Amaranthus caudatus</i>	ACL, ACA	<i>Amaranthus caudatus</i> seeds	66-70	2	6.7 - 7.7	1.60	No	No
<i>Bauhinia purpurea</i>	BPL, BPA	<i>Bauhinia purpurea alba</i> (Camel's Foot Tree) seeds	195	4	4.6 - 6	1.75	Yes	No
Concanavalin A	Con A	<i>Canavalia ensiformis</i> (Jack Bean) seeds	104	4	6.3 - 7	1.20	No	Ca ⁺⁺ , Mn ⁺⁺
Succinylated Concanavalin A	Succinylated Con A	<i>Canavalia ensiformis</i> (Jack Bean) seeds	56	2	< 4.4	1.2	No	Ca ⁺⁺ , Mn ⁺⁺
<i>Datura stramonium</i>	DSL	<i>Datura stramonium</i> (Thorn Apple, Jimson Weed) seeds	86	1	> 9	0.80	Yes	No
<i>Dolichos biflorus</i>	DBA	<i>Dolichos biflorus</i> (Horse Gram) seeds	111	4	4.6 - 5	1.22	Yes	Ca ⁺⁺ , Mn ⁺⁺ , Mg ⁺⁺ , Zn ⁺⁺
<i>Erythrina cristagalli</i>	ECL, ECA	<i>Erythrina cristagalli</i> (Coral Tree) seeds	54	2	6.3 - 6.5	1.30	Yes	Ca ⁺⁺ , Mn ⁺⁺ , Zn ⁺⁺
<i>Eunonymus europaeus</i>	EEL	<i>Eunonymus europaeus</i> (Spindle Tree) seeds	140	4	4.4	2.40	Yes	Ca ⁺⁺ , Zn ⁺⁺
<i>Galanthus nivalis</i>	GNL	<i>Galanthus nivalis</i> (Snowdrop) bulbs	50	4	3.5 - 4	1.90	No	No
<i>Griffonia (Bandeiraea) simplicifolia</i> I	GSL I, BSL I	<i>Griffonia (Bandeiraea) simplicifolia</i> seeds	114	4	5 - 6.5	1.40	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Griffonia (Bandeiraea) simplicifolia</i> I Isolectin B ₄	GSL I - B ₄	<i>Griffonia (Bandeiraea) simplicifolia</i> seeds	114	4	6 - 6.2	1.4	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Griffonia (Bandeiraea) simplicifolia</i> II	GSL II, BSL II	<i>Griffonia (Bandeiraea) simplicifolia</i> seeds	113	2	5 - 6	1.25	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Hippeastrum hybrid</i>	HHL, AL	<i>Hippeastrum hybrid</i> (Amaryllis) bulbs	50	4	4.7 - 5.1	1.85	No	No
Jacalin	Jacalin	<i>Artocarpus integrifolia</i> (Jackfruit) seeds	66	4	7.8	1.50	Yes	No
<i>Lens culinaris</i>	LCA, LCH	<i>Lens culinaris</i> (lentil) seeds	50	4	7.6 - 8.4	1.25	No	Ca ⁺⁺ , Mn ⁺⁺
<i>Lotus tetragonolobus</i>	LTL	<i>Lotus tetragonolobus</i> , <i>Tetragonolobus purpurea</i> (Winged Pea, Asparagus Pea) seeds	107	4	7.3, 7.6, 7.9 & 8.2	1.51	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Lycopersicon esculentum</i>	LEL, TL	<i>Lycopersicon esculentum</i> (tomato) fruit	71	1	>9	0.76	Yes	--
<i>Maackia amurensis</i> I	MAL I, MAL	<i>Maackia amurensis</i> seeds	130	2	4.7	1.40	Yes	No
<i>Maackia amurensis</i> II	MAL II, MAH	<i>Maackia amurensis</i> seeds	130	2	4.7	1.33	Yes	No
<i>Maclura pomifera</i>	MPL	<i>Maclura pomifera</i> (Osage Orange) seeds	44	4	4.8 - 5.3	1.40	No	No
<i>Narcissus pseudonarcissus</i>	NPL, NPA, DL	<i>Narcissus pseudonarcissus</i> (Daffodil) bulbs	59	4	4.2 - 4.6	1.87	No	No

Lectin	Mitogenic Activity	Blood Group Specificity	Preferred Sugar Specificity	Inhibitor or Eluting Sugar	Special Application
<i>Aleuria aurantia</i>	No	Non-specific	Fuc α 6GlcNAc	L-Fuc	Tumor cell marker detection
<i>Amaranthus caudatus</i>	Yes	O>B>A (-SA) T antigen	Gal β 3GalNAc	desialyzed fetuin	T-antigen probe
<i>Bauhinia purpurea</i>	Yes	A,B,O (-SA)	Gal β 3GalNAc	Lactose	Detection of Reed Sternberg cells of Hodgkin's disease; binds N-Antigen of human erythrocytes
Concanavalin A	Yes	Non-specific	α Man, α Glc	Me α Man+ Me α Glc	Polylysine and histone conjugated as vectors to transfer genes to airway epithelial cells; insulin-like activity
Succinylated Concanavalin A	Yes	None	α Man, α Glc	Me α Man+ Me α Glc	Growth inhibitor of 3T3 mouse fibroblasts
<i>Datura stramonium</i>	Yes	A, B, O	(GlcNAc) ₂₋₄	Chitin hydrolysate	Marker for mouse peritoneal cells
<i>Dolichos biflorus</i>	No	A ₁ >>A ₂	α GalNAc	GalNAc	Distinguishes A ₁ from A ₂ human red blood cells; binds to rat macrophages in lung tissues
<i>Erythrina cristagalli</i>	Yes	A (-SA)	Gal β 4GlcNAc	Lactose	Isolation of human natural killer cells
<i>Euonymus europaeus</i>	Yes	O (-SA), B	Gal α 3Gal	Lactose	Endothelial cell binding
<i>Galanthus nivalis</i>	No	Rabbit	α Man	Me α Man	Detection of HIV and SIV glycoprotein; isolation of mouse IgM; virus isolation
<i>Griffonia (Bandeiraea) simplicifolia I</i>	No	B>>A1	α Gal, α GalNAc	Gal/GalNAc	Endothelial cell marker (for mouse)
<i>Griffonia (Bandeiraea) simplicifolia I Isolectin B₄</i>	No	B	α Gal	Gal or Raffinose	Non-primate endothelial cell marker; neuronal marker
<i>Griffonia (Bandeiraea) simplicifolia II</i>	No	A (-SA)>>B (-SA)	α or β GlcNAc	Chitin hydrolysate or GlcNAc	Selective staining of Golgi apparatus; marker for uterine blood vessels and certain carcinomas
<i>Hippeastrum hybrid</i>	No	Rabbit	α Man	Me α Man	
Jacalin	Yes	O (+SA), T antigen	Gal β 3GalNAc	Gal or Melibiose	Purification of human IgA
<i>Lens culinaris</i>	Yes	Non-specific	α Man, α Glc	Me α Man+ Me α Glc	
<i>Lotus tetragonolobus</i>	No	O<A2	α Fuc	L-Fuc	Distinguishes between pathogenic and non-pathogenic trypanosomes
<i>Lycopersicon esculentum</i>	No	Non-specific	(GlcNAc) ₂₋₄	Chitin hydrolysate	Perfusion studies in mouse (binding to vascular endothelium)
<i>Maackia amurensis I</i>	Yes	Non-specific	Gal β 4GlcNAc	Lactose	
<i>Maackia amurensis II</i>	Yes	Non-specific	Neu5Ac α 3Gal β 4GalNAc	Human Glycophorin	
<i>Maclura pomifera</i>	Yes	A, B, O (-SA)	Gal β 3GalNAc	Gal	Binding to rat lymphoid cells
<i>Narcissus pseudonarcissus</i>	No	Rabbit	α Man	Me α Man	Detection of beginning of apoptosis of human cell lines

Sugar Abbreviations:

Fuc	L-Fucose	Man	Mannose
Gal	D-Galactose	Me α Glc	α -Methylglucoside
GalNAc	N-Acetylgalactosamine	Me α Man	α -Methylmannoside
Glc	D-Glucose	Neu5Ac	N-Acetylneuraminic acid (sialic acid)
GlcNAc	N-Acetylglucosamine	SA	Sialic Acid

Table of Lectin Properties (continued)

Lectin	Common Abbreviation	Source	Mol. Wt. (kDa)	Number of Subunits	pI	$\epsilon_{0.1\% \text{ 280 nm}}$	Glycoprotein	Metal Ions Present
Peanut	PNA	<i>Arachis hypogaea</i> peanuts	110	4	5.5 - 6.5	0.89	No	Ca ⁺⁺ , Mg ⁺⁺
<i>Phaseolus vulgaris</i> Erythroagglutinin (PHA-E)	PHA-E	<i>Phaseolus vulgaris</i> (Red Kidney Bean) seeds	126	4	6 - 8	1.16	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Phaseolus vulgaris</i> Agglutinin (PHA-E+L)	PHA-E+L	<i>Phaseolus vulgaris</i> (Red Kidney Bean) seeds	126	4	5.2 - 6.2	1.16	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Phaseolus vulgaris</i> Leucoagglutinin (PHA-L)	PHA-L	<i>Phaseolus vulgaris</i> (Red Kidney Bean) seeds	126	4	4.2 - 4.8	1.16	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Pisum sativum</i>	PSA	<i>Pisum sativum</i> (Pea) seeds	53	4	6.0 - 6.7	1.20	Trace	Ca ⁺⁺ , Mn ⁺⁺
<i>Psophocarpus tetragonolobus</i> I	PTL I, WBA I	<i>Psophocarpus tetragonolobus</i> (Winged Bean) seeds	57	2	8.0	0.95	Yes	--
<i>Psophocarpus tetragonolobus</i> II	PTL II, WBA II	<i>Psophocarpus tetragonolobus</i> (Winged Bean) seeds	46	2	6.0	1.20	Yes	--
<i>Ricinus communis</i> I	RCA I, RCA ₁₂₀	<i>Ricinus communis</i> (Castor Bean) seeds	120	2	7.8	1.17	Yes	No
<i>Ricinus communis</i> II, ricin	RCA II, RCA ₆₀ , ricin	<i>Ricinus communis</i> (Castor Bean) seeds	60	1	7.1	1.17	Yes	No
Ricin A Chain	Ricin A Chain	RCA ₆₀	28	1	7.5	0.7	Yes	No
Ricin B Chain	Ricin B Chain	RCA ₆₀	32	1	4.5	1.64	Yes	No
<i>Sambucus nigra</i>	SNA, EBL	<i>Sambucus nigra</i> (Elderberry) bark	140	4	5.4 - 5.8	1.50	Yes	No
<i>Solanum tuberosum</i>	STL, PL	<i>Solanum tuberosum</i> , (potato) tubers	100	2	>9	0.80	Yes	No
<i>Sophora japonica</i>	SJA	<i>Sophora japonica</i> (Japanese Pagoda Tree) seeds	133	2	4.9 - 5.6	1.67	Yes	Ca ⁺⁺ , Mn ⁺⁺
Soybean	SBA	<i>Glycine max</i> (soybean) seeds	120	4	5.8 - 6	1.33	Yes	Ca ⁺⁺ , Mn ⁺⁺
<i>Ulex europaeus</i> I	UEA I	<i>Ulex europaeus</i> (Furze Gorse) seeds	63	2	4.5 - 5.1	1.30	Yes	Ca ⁺⁺ , Mn ⁺⁺ , Zn ⁺⁺
<i>Vicia villosa</i>	VVL, VVA	<i>Vicia villosa</i> (Hairy Vetch) seeds	144*	4	5.5 - 6.2	0.78	Yes	Ca ⁺⁺ , Mn ⁺⁺
Wheat Germ	WGA	<i>Triticum vulgaris</i> (wheat germ)	36	2	>9	1.46	No	Ca ⁺⁺
Succinylated Wheat Germ	Succinylated WGA	<i>Triticum vulgaris</i> (wheat germ)	36	2	<3	1.46	No	Ca ⁺⁺
<i>Wisteria floribunda</i>	WFA, WFL	<i>Wisteria floribunda</i> (Japanese Wisteria) seeds	116	4	5.2 - 5.8	0.89	Yes	--

* Literature values reported; 102 kDa - 144 kDa

Lectin	Mitogenic Activity	Blood Group Specificity	Preferred Sugar Specificity	Inhibitor or Eluting Sugar	Special Application
Peanut	No	T antigen (M, N)	Gal β 3GalNAc	Gal	Detection of relocalization of Tag antigen in large bowel carcinoma
<i>Phaseolus vulgaris</i> Erythroagglutinin (PHA-E)	Yes	A(-SA)	Gal β 4GlcNAc β 2Man α 6 (GlcNAc β 4) (GlcNAc β 4Man α 3) Man β 4	bovine thyroglobulin, acetic acid	Binding to central nervous system cells (HNK-1 antigen)
<i>Phaseolus vulgaris</i> Agglutinin (PHA-E+L)	Yes	A(-SA)	See PHA-E/PHA-L	bovine thyroglobulin, acetic acid	Binding to central nervous system cells (HNK-1 antigen)
<i>Phaseolus vulgaris</i> Leucoagglutinin (PHA-L)	Yes	–	Gal β 4GlcNAc β 6(GlcNAc β 2Man α 3)Man α 3	bovine thyroglobulin, acetic acid	Anterograde neuronal tracing; metastatic tumor marker; lymphocyte mitogen for lymphokine production
<i>Pisum sativum</i>	Yes	Non-specific	α Man, α Glc	Mec α Man+ Mec α Glc	Separation of lymphoblastic leukemia antigen in kidney cells; purification of feline T-lymphocytes from peripheral blood
<i>Psophocarpus tetragonolobus</i> I	No	Rabbit, O(-SA)	GalNAc, Gal	GalNAc	Staining of mouse M-cells; blood vessel staining of A and B blood group individuals
<i>Psophocarpus tetragonolobus</i> II	No	O(-SA)	GalNAc, Gal	GalNAc	Blood vessel staining (human) of blood group O individuals
<i>Ricinus communis</i> I	No	Non-specific	Gal	Gal or Lactose	Labeling of receptors on sprouting rat neurons
<i>Ricinus communis</i> II, ricin	No	Non-specific	Gal, GalNAc	Gal or Lactose	TOXIC - Used in rat neuronal retrograde transport (suicide transport)
Ricin A Chain	No	–	–	–	Produce hybrid toxins
Ricin B Chain	Yes	–	Gal	Gal or Lactose	Used to potentiate antibody ricin A chain conjugates for tumor toxicity
<i>Sambucus nigra</i>	No	Non-specific	Neu5Ac α 6Gal/GalNAc	Lactose in buffered saline & acetic acid	Used to distinguish sialylated oligosaccharides bound by human A influenza virus
<i>Solanum tuberosum</i>	No	Non-specific	(GlcNAc) _{2,4}	Chitin hydrolysate	Staining of prostate cancer cell line; bacterial cell wall binding
<i>Sophora japonica</i>	No	A>B>O(-SA)	β GalNAc	GalNAc	Distinguishes between pathogenic and non pathogenic trypanosomes
Soybean	Yes	A>O>B	α > β GalNAc	GalNAc	Stem cell separation
<i>Ulex europaeus</i> I	No	O>A2	α Fuc	L-Fuc	Human endothelial cell marker
<i>Vicia villosa</i>	No	Tn antigen	GalNAc	GalNAc	Staining of neurons on human cerebral cortex, detection of Tn and Cad antigens
Wheat Germ	Yes	A,B,O	GlcNAc	Chitin hydrolysate or GlcNAc with acid or salt	Insulin receptor purification, neuronal tracing; bacterial cell wall binding
Succinylated Wheat Germ	No	A,B,O	GlcNAc	Chitin hydrolysate or GlcNAc with acid or salt	Differential binding to intrahepatic blood vessels
<i>Wisteria floribunda</i>	Yes	Non-specific	GalNAc	GalNAc, acetic acid	Serotyping α -hemolytic streptococci

Sugar Abbreviations:

Fuc	L-Fucose	Man	Mannose
Gal	D-Galactose	Mec α Glc	α -Methylglucoside
GalNAc	N-Acetylgalactosamine	Mec α Man	α -Methylmannoside
Glc	D-Glucose	Neu5Ac	N-Acetylneuraminic acid (sialic acid)
GlcNAc	N-Acetylglucosamine	SA	Sialic Acid