CALBIOCHEM®

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LECTINS

Lectins are non-enzymatic proteins or glycoproteins that bind carbohydrates. Although they were first identified in plants over a century ago, they are now known to exist throughout nature, including both eukaryotic and prokaryotic organisms. While all lectins have a carbohydrate recognition domain (CRD) that determines their specificity, the classification of lectins depends on the source, i.e. plant, animal, microbial, etc. The animal lectins are classified based on their amino acid sequence homology and evolutionary relatedness, while the plant lectins are grouped according to the plant family. Lectins found in microorganisms tend to be classified according to the function, e.g. adhesins or hemagglutinins and toxins.

Lectins are found in both soluble and cell-associated forms and exhibit a wide range of functions. Animal lectins are involved in a variety of cellular processes, including enzyme trafficking, tissue homing, and immune function. Microbial carbohydrate binding proteins largely function in host cell attachment, tissue colonization, and invasion. The biological function of plant lectins is not fully understood, but they are hypothesized to be involved in a number of intrinsic processes. These include deposition of storage proteins, maintenance of seed dormancy, defense against pathogens and animal predators, symbiosis, transport of carbohydrates, mitogenic stimulation of embryonic plant cells, elongation of cell walls, and recognition of pollen.

Despite the lack of information regarding the biological function of plant lectins, there is an enormous interest in these molecules and, thus, they have been well-defined with regard to their carbohydrate specificities. They are found in multiple parts of the plant, including the seeds, bark, stems, and leaves. They are relatively easy to extract and have become invaluable research tools in many disciplines, including glycobiology, immunology, and cell biology. For example, due to their ability to distinguish carbohydrate determinants on human red blood cells, they can be used for blood typing. Lectins like concanavalin A (ConA), pokeweed mitogen, and phytohemagglutinin (PHA) are frequently used to stimulate peripheral blood lymphocytes. Because of their exquisite specificity and affinity for the corresponding carbohydrate ligand, lectins are also used to characterize and purify glycoconjugates. CALBIOCHEM® is pleased to offer a variety of lectins for these and other applications.

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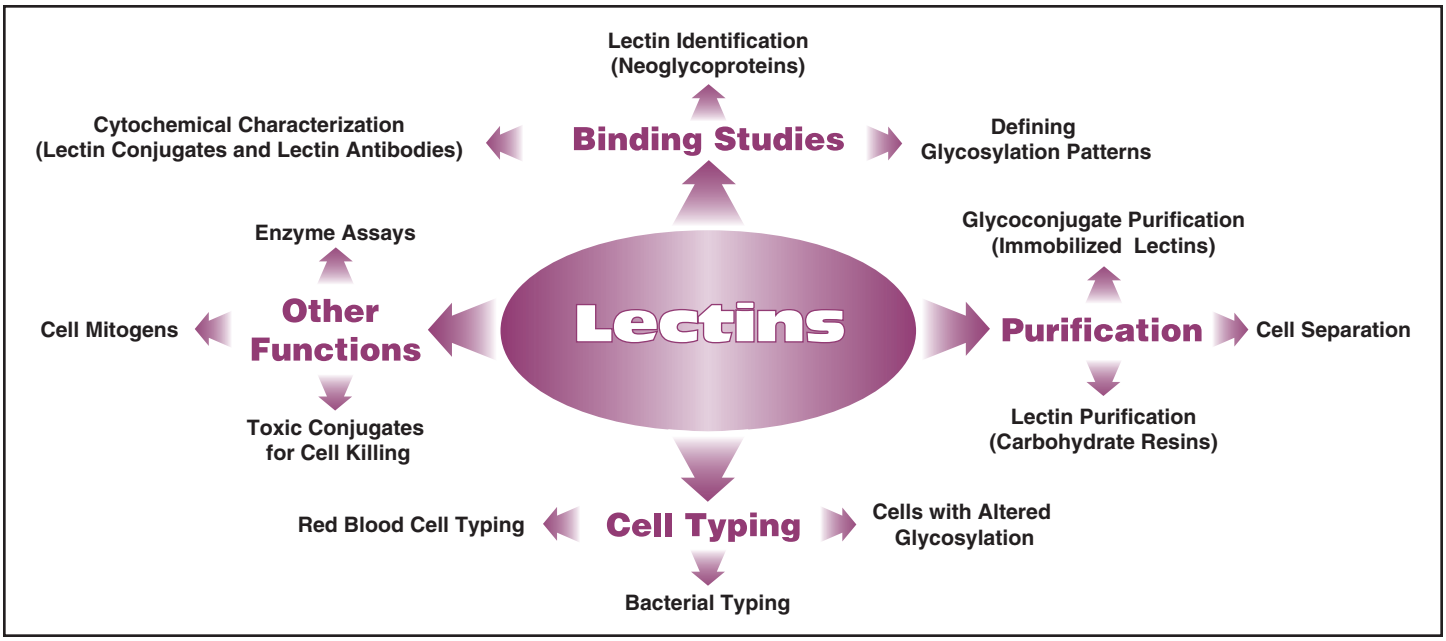

LECTINS

Lectin/Source	Cat. No.	Specificity	Inhibitory/Eluting Carbohydrate	Ref.
Concanavalin A, *Canavalia ensiformis*	234567	α-Man; α-Glc (to a lesser extent)	Methyl-D-α-mannopyranoside (cat. no. 462711) > Man (cat. no. 4440) > Glc (Cat. No. 346351) > GlcNAc (Cat. No. 1079)	1-4
Datura stramonium	431770	GlcNAcβ1,4GlcNAc oligomers; LacNAc (Cat. No. 345250)	Chitotriose (Cat. No. 220473) > Chitobiose (Cat. No. 220472) >GlcNAc (Cat. No. 1079)	5-7
Dolichos biflorus	431772	Terminal α-GalNAc; Blood Group A	GalNAc (Cat. No. 1077)	8
Garden pea, *Pisum sativum*	431786	Biantennary and triantennary oligosaccharides with core fucose; Fucα1,6-GlcNAc important in recognition	Methyl-D-α-mannopyranoside (Cat. No. 462711), Man (Cat. No. 4440)	9
GS-I-B4, *Griffonia simplicifolia*	431774	α-Gal	Raffinose, Gal (Cat. No. 3455)	10,11
Jacalin, *Artocarpus integrifolia*	431776	Core β1,3GalNAc (T Antigen); Terminal α-Gal	Methyl-D-α-galactopyranoside, Gal (Cat. No. 3455)	12,13
Lentil, *Lens culinaris*	122115	α-Man; fucose linked to chitobiose core of N-linked oligosaccharide enhances binding	Methyl-D-α-glucopyranoside, followed by or added to Methyl-D-α-mannopyranoside (Cat. No. 462711), Man (Cat. No. 4440), Glc (Cat. No. 346351)	14,15
Lotus, *Lotus tetragonolobus*	431778	Terminal α-Fuc	L-Fuc (Cat. No. 3448),Le^X (Galβ1,4[Fucα1,3]GlcNAc) (Cat. No. 434630)	16
MAL I, *Maackia amurensis*	431780	Neu5Acα2,3Galβ1,4GlcNAc (Cat. No. 565925)	Lac (Cat. No. 427502), Neu5Acα2,3Gal	17,18
Peanut, *Arachis hypogaea*	122117	Galβ1,3GalNAc (T antigen) (Cat. No. 575300); T antigen, α-Methyl Glycoside (Cat. No. 575302)	Lac (Cat. No. 427502) > Gal (Cat. No. 3455)	19
PHA-E, *Phaseolus vulgaris*	431782	Complex biantennary oligosaccharides with outer galactose and bisecting GlcNAc	GalNAc (Cat. No. 1077)	20-22
PHA-L, *Phaseolus vulgaris*	431784	Triantennary and tetraantennary complex oligosaccharides	GalNAc (Cat. No. 1077)	20-22
Potato, *Solanum tuberosum*	431788	GlcNAcβ1,4-R	Chitotetraose (GlcNAcβ1,4GlcNAcβ1,4GlcNAcβ1,4GlcNAc (Cat. No. 220474) > Chitotriose (GlcNAcβ1,4GlcNAcβ1,4GlcNAc) (Cat. No. 220473) > Chitobiose (GlcNAcβ1,4GlcNAc) (Cat. No. 220472)	5,23
Sambucus nigra	431792	Neu5Acα2,6Gal; Neu5Acα2,6GalNAc	Neu5Acα2,6Gal or NeuAcα2,6GalNAc > GalNAc (Cat. No. 1077) = Lac (Cat. No. 427502) > Gal (Cat. No. 3455)	24-27
Slug, *Limax flavus*	122129	Neu5Ac; NeuGc	Neu5Ac (Cat. Nos. 110138 and 110141), NeuGc (Cat. No. 362000)	28-30
Soybean, *Glycine soja*	122119	α- or β-GalNAc; Gal (to a lesser extent)	GalNAc (Cat. No. 1077)	31,32
Tomato, *Lycopersicon esculentum*	431794	GlcNAcβ1,4GlcNAc oligomers	Mixture of chitobiose (GlcNAcβ1,4GlcNAc) (Cat. No. 220472) and chitotriose (GlcNAcβ1,4GlcNAcβ1,4GlcNAc) (Cat. No. 220473)	5,33
Tritrichomonas mobilensis	431800	Neu5Ac; NeuGc (to a lesser extent)	Neu5Ac (Cat. Nos. 110138 and 110141)	34-36
Ulex europaeus I	431806	Bood Group H oligosaccharides, Fucα1,2Galβ1,4GlcNAc (Cat. No. 344703)	L-Fuc (Cat. No. 3448)	37
Vicia villosa	431808	Tn antigen; GalNAcα1-O-Serine	GalNAc (Cat. No. 1077)	38,39
Wheat Germ, *Triticum vulgaris*	681816	$(GlcNAc)_2$; $(GlcNAc)_3$; Neu5Ac	Chitotriose (GlcNAcβ1,4GlcNAcβ1,4GlcNAc) (Cat. No. 220473) > Chitobiose (GlcNAcβ1,4GlcNAc) (Cat. No. 220472) > GlcNAc (Cat. No. 1079) >> Neu5Ac (Cat. Nos. 110138 and 110141) >> GalNAc (Cat. No. 1077)	40-42
Wisteria floribunda	431810	Terminal GalNAcβ1,4- >> Terminal GalNAcα1,3- or Terminal GalNAcβ1,3-	GalNAc (Cat. No. 1077) >> Lac (Cat. No. 427502) > Gal (Cat. No. 3455)	43-45

Key:
Fuc = Fucose; Gal = Galactose; GalNAc = N-acetyl-galactosamine; Glc = Glucose; GlcNAc = N-acetyl-glucosamine; Lac = Lactose; Man = Mannose; Neu5Ac = N-acetyl-neuraminic acid (sialic acid); NeuGc = N-glycolylneuraminic acid

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IMMOBILIZED LECTINS*

Due to the precise specificity of plant lectins for N- and O-glycans of animal cell glycoconjugates, immobilized forms of these lectins are used in affinity purification of glycoproteins, glycopeptides, free glycans, and glycolipids. CALBIOCHEM® is pleased to offer the following immobilized lectins:

Lectin	Cat. No.
Concanavalin A, *Canavalia ensiformis* Agarose Conjugate	234568
Concanavalin A Plate, Clear Polystyrene	234590
Concanavalin A Plate, Opaque White Polystyrene	234592
Concanavalin A Strips, Clear Polystyrene	234594
Concanavalin A Strips, Opaque White Polystyrene	234596
Garden Pea, *Pisum sativum*, Agarose Conjugate	431787
GS-I-B4, *Griffonia simplicifolia*, Agarose Conjugate	431775

Lectin	Cat. No.
Jacalin, *Artocarpus integrifolia*, Agarose Conjugate	431777
Peanut, *Arachis hypogaea*, Agarose Conjugate	122116
Tritrichomonas mobilensis, Agarose Conjugate	431804
Ulex europaeus I, Agarose Conjugate	431807
Wheat Germ, *Triticum vulgaris*, Agarose Conjugate	681817

* Concanavalin A Agarose Conjugate is available in a 10 ml size. The remaining immobilized lectins are provided as a set of columns containing a 1 ml lectin column and a negative control column.

OTHER LECTIN PRODUCTS

Name	Cat. No.
Concanavalin A, *Canavalia ensiformis*, Fluorescein-Labeled	234235
Peanut, *Arachis hypogaea*, Fluorescein-Labeled	343249

Name	Cat. No.
Anti-Lectin, *Tritrichomonas mobilensis*, (Mouse) Suitable for use in ELISA, flow cytometry, immunohistochemistry, and immunoblotting	431801

Neoglycoproteins are chemically-synthesized glycoproteins in which the saccharide portion is covalently linked to a protein. The major advantages of using neoglycoconjugates are that the carbohydrate structure is known, its level of purity can be assessed, and they can usually be synthesized in large quantities. These can be used in a wide variety of applications, including binding studies. CALBIOCHEM® is pleased to offer the following neoglycoproteins:

Product Name	Synonym	Cat. No.
N-Acetylgalactosamine-HSA, 10-Atom Spacer	GalNAcα-HSA	110156
3'-N-Acetylneuraminyl-N-acetyllactosamine-BSA, 3-Atom Spacer	Sialylacetyllactosamine-BSA; SLN-BSA	110148
Blood Group B Trisaccharide-BSA, 10-Atom Spacer	Galα1,3(Fuc 1,2)Gal -BSA	202768
Galactose 1,3-Galactose-BSA, 10 Atom Spacer	Gal1,3Gal-BSA	345524
Lacto-N-fucopentaose III-BSA, 14-Atom Spacer	LNFP III-BSA	427336
Linear B-2 Trisaccharide-BSA, 10-Atom Spacer	Galα1,3Gal 1,4GlcNAc -BSA	436200
1,3 1,6-Mannotriose-BSA, 10-Atom Spacer	Man1,3Man 1,6Man -BSA	444044
Sialyl Lewis x-BSA, 14-Atom Spacer	Sialyl-Le -BSA	565952

CARBOHYDRATE AFFINITY RESINS

Carbohydrate affinity resins are a form of immobilized carbohydrates of known structure that can be used for the purification of glycosidases, glycosyltransferases, anti-carbohydrate antibodies, and lectins. CALBIOCHEM® is pleased to offer the following carbohydrate affinity resins for your purification needs:

Product Name	Cat. No.	Size
Carbohydrate Affinity Resin, N-Acetyllactosamine-Agarose	215360	5 ml
Carbohydrate Affinity Resin, Gal-Agarose	215366	5 ml
Carbohydrate Affinity Resin, Gal1,4Gal-Agarose	215365	2 ml
Carbohydrate Affinity Resin, GalNAcα-Agarose	215362	2 ml