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ProductInformation

Lectin
from *Triticum vulgaris*
Peroxidase Labeled

Product Number **L 7017**
Storage Temperature 0 °C

Product Description
At low pH (below pH 3), this lectin is a monomer (17 kDa by sedimentation velocity). However, it is a dimer (35 kDa by sedimentation velocity) at neutral to slightly acidic pH.[1,2] By SDS-PAGE analysis, the monomers migrate as 18 kDa proteins.[3]

The absorption maximum (λ_{max}) for the native dimer is 272 nm with a molar extinction coefficient (E^M) of 1.09×10^5. The pI varies by lectin isoform (isolectins I, IIa, III - pI = 8.7 +/- 0.3 and isolectin IIb - pI = 7.7 +/- 0.3).[4]

Lectins are proteins or glycoproteins of non-immune origin that agglutinate cells and/or precipitate complex carbohydrates. Lectins are capable of binding glycoproteins even in presence of various detergents.[5] The agglutination activity of these highly specific carbohydrate-binding molecules is usually inhibited by a simple monosaccharide, but for some lectins, di, tri, and even polysaccharides are required.

Lectins are isolated from a wide variety of natural sources, including seeds, plant roots and bark, fungi, bacteria, seaweed and sponges, mollusks, fish eggs, body fluids of invertebrates and lower vertebrates, and from mammalian cell membranes. The precise physiological role of lectins in nature is still unknown, but they have proved to be very valuable in a wide variety of applications *in vitro*, including:

1. blood grouping and erythrocyte polyagglutination studies.
2. mitogenic stimulation of lymphocytes.
3. lymphocyte subpopulation studies.
4. fractionation of cells and other particles.
5. histochemical studies of normal and pathological conditions.

Sigma offers a range of lectins suitable for the above applications. Most Sigma lectins are highly purified by affinity chromatography, but some are offered as purified or partially purified lectins, suitable for specific applications.

Many of the lectins are available conjugated to (conjugation does not alter the specificity of the lectin):

1. fluorochromes (for detection by fluorimetry).
2. enzymes (for enzyme-linked assays).
3. insoluble matrices (for use as affinity media).

Please refer to the table for general information on the most common lectins.

The inhibition of agglutination activity by di-N-acetylglucosamine $(GlcNAc)_2$ on this wheat germ lectin is reported to be aproximately 600 times greater than that of N-acetylglucosamine (GlcNAc). Tri-N-acetylglucosamine $(GlcNAc)_3$ is reported to be about 3000 times more inhibitory than GlcNAc.[6]

This product is labeled with horseradish peroxidase. The peroxidase label allows use of this lectin in blotting procedures for the identification of sugar side-chains on proteins. This product is similar to Product No. L 3892, but it is packaged in microcone vials for ease of reconstitution and recovery of microliter volumes.

Procedure
A general procedure for probing sugar side chains on immobilized proteins is as follows:

1. Proteins are first separated by SDS-PAGE and transferred to nitrocellulose.
2. Excess binding sites are blocked by incubation in PBS containing 2% (v/v) TWEEN® 20 for 2 minutes at 20 °C.
3. Rinse the blot twice in PBS.
4. Incubate with 1 to 5 μg of lectin-peroxidase in PBS containing 0.05% (v/v) TWEEN 20, with 1 mM $CaCl_2$, 1 mM $MnCl_2$, and 1 mM $MgCl_2$ for 16 hours at 20 °C.
5. Remove surplus lectin by rinsing in PBS.
6. Peroxidase activity can be detected using standard HRP substrates.

Precautions and Disclaimer
For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions
This lectin is soluble in phosphate buffered saline, pH 7.2 (1 mg/ml).

The maximum solubility in 1 mM Tris-HCl, pH 7.4, is reported to be approximately 1 mg/ml. Solubility is greatly increased at low pH (maximum solubility in 0.1 M acetic acid is >10 mg/ml).[7]

Storage/Stability
Aggregation is thought to occur in the presence of high concentrations of 2-mercaptoethanol.

Lectin	MW (kDa)	Subunits	Specificity Blood Group	 Sugar	Mitogenic Activity
Abrus precatorius			–		+
Agglutinin	134	4		gal	
Abrin A (toxin)	60	2		gal	
Abrin B (toxin)	63.8	2(αβ)		gal	
Agarius bisporus	58.5	–	–	β-gal(1→3)galNAc	
Anguilla anguilla	40	2	H	α-L-Fuc	
Arachis hypogaea	120	4	T	β-gal(1→3)galNAc	
Artocarpus integrifolia	42	4	T	α-gal→OMe	+
Bandeiraea simplicifolia					
BS-I	114	4	A, B	α-gal, α-galNAc	
BS-I-A_4	114	4	A	α-galNAc	
BS-I-B_4	114	4	B	α-gal	
BS-II	113	4	acq, B, Tk, T	glcNAc	
Bauhinia purpurea	195	4	–	β-gal(1→3)galNAc	+
Caragana arborescens	60; 120[a]	2/4	–	galNAc	
Cicer arietinum	44	2	–	fetuin	
Codium fragile	60	4	–	galNAc	
Concanavalin A	102	4	–	α-man, α-glc	+
Succinyl-Concanavalin A	51	2	–	α-man, α-glc	+[b]
Cytisus scoparius	–	–	–	galNAc, gal	
Datura stramonium	86	2(αβ)	–	$(glcNAc)_2$	
Dolichos biflorus	140	4	A_1	α-galNAc	
Erythrina corallodendron	60	2	–	β-gal(1→4)glcNAc	+
Erythrina cristagalli	56.8	2(αβ)	–	β-gal(1→4)glcNAc	
Euonymus europaeus	166	4(αβ)	B, H	α-gal(1→3)gal	+
Galanthus nivalis	52	4	(h)	non-reduc. α-man	
Glycine max	110	4	–	galNAc	+[c]
Helix aspersa	79	–	A	galNAc	
Helix pomatia	79	6	A	galNAc	
Lathyrus odoratus	40-43	4(αβ)	–	α-man	+
Lens culinaris	49	2	–	α-man	+
Limulus polyphemus	400	18	–	NeuNAc	
Bacterial agglutinin	–	–	–	galNAc, glcNAc	
Lycopersicon esculentum	71	–	–	$(glcNAc)_3$	
Maackia amurensis	130	2(αβ)	O	sialic acid	+
Maclura pomifera	40-43	2(αβ)	–	α-gal, α-galNAc	
Momordica charantia	115-129	4(αβ)	–	gal, galNAc	
Naja mocambique mocambique	–	–	–	–	
Naja naja kaouthia	–	–	–	–	
Narcissus pseudonarcissus	26	2	(h)	α-D-man	
Perseau americana	–	–	–	–	
Phaseolus coccineus	112	4	–	–	
Phaseolus limensis	247(II) 124(III)	8 4	A	galNAc	+
Phaseolus vulgaris					
PHA-E	128	4	–	oligosaccharide	+
PHA-L	128	4	–	oligosaccharide	+
PHA-P					
PHA-M					

- Table continued on next page -

Lectin	MW (kDa)	Subunits	Specificity Blood Group	 Sugar	Mitogenic Activity
Phytolacca americana	32	–	–	$(glcNAc)_3$	+
Pisum sativum	49	4(αβ)	–	α-man	+
Pseudomonas aeruginosa PA-I	13-13.7	–	–	gal	+[c]
Psophocarpus tetragonolobus	35	1	–	galNAc, gal	
Ptilota plumosa	65; 170	–	B	α-gal	
Ricinus communis					
Toxin, RCA_{60}	60	2	–	galNAc, β-gal	
Toxin, RCA_{120}	120	4	–	β-gal	
Sambucus nigra	140	4(αβ)	–	αNeuNAC(2→6)gal galNAc	+[c]
Solanum tuberosum	50; 100[a] 1, 2		–	$(glcNAc)_3$	
Sophora japonica	133	4	A, B	β-galNAc	
Tetragonolobus purpureas	120(A)	4	H	α-L-fuc	
	58(BA)	2	H	α-L-fuc	
	117(C)	4	H	α-L-fuc	
Triticum vulgaris	36	2	–	$(glcNAc)_2$, NeuNAc	+
Ulex europaeus					
UEA I	68	–	H	α-L-fuc	
UEA II	68	–	–	$(glcNAc)_2$	
Vicia faba	50	4(αβ)	–	man, glc	+
Vicia sativa	40	4(αβ)	–	glc, man	+
Vicia villosa	139	4	$A_{1+}T_n$	galNAc	
A_4	134	4	A_1	galNAc	
B_4	143	4	T_n	galNAc	
Vigna radiata	160	4	–	α-gal	
Viscum album	115	4(αβ)	–	β-gal	
Wisteria floribunda	68	2	–	galNAc	

[a] Concentration-dependent molecular weight
[b] Non-agglutinating and mitogenic
[c] Mitogenic for neuraminidase-treated lymphocytes

References

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