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# ProductInformation

**Lectin from *Bandeiraea simplicifolia***
**Isolectin $B_4$ ($BSI\text{-}B_4$), peroxidase conjugate**

Catalog Number **L5391**
Storage Temperature –20 °C

## Product Description

Lectins are proteins or glycoproteins of non-immune origin that agglutinate cells and/or precipitate complex carbohydrates. Lectins are capable of binding carbohydrates even in the presence of various detergents.[1] 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 are highly purified by affinity chromatography, but some are offered as purified or partially purified, suitable for specific applications. Many lectins are available conjugated to the following:

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

**Note**: Conjugation does not alter lectin specificity.

Please refer to the following table for lectin specificity, mitogenic activity, molecular weight and number of subunits.

## Reagent

Lyophilized powder containing sodium citrate buffer salts and calcium chloride.

Labeled with peroxidase type VI. Repurified by affinity chromatography after conjugation.

Useful in histological studies [2] and in blotting procedures for the identification of sugar side-chains on proteins.

## Procedure

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

1. Separate proteins by SDS-PAGE and transfer to nitrocellulose.
2. Block excess binding sites 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 1-5 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. Detect peroxidase activity using standard HRP substrates.

## Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

## Preparation Instructions

Soluble in 0.9% sodium chloride solution (1 mg/ml), yielding a clear, yellow solution.

## Storage/Stability

Store the lyophilized powder at -20 °C. Under these conditions the product is stable for 2 years.

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| Lectin | MW (kDa) | Subunits | Specificity | | Mitogenic Activity |
|---|---|---|---|---|---|
| | | | Blood Group | Sugar | |
| *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) | 8 | A | galNAc | + |
| | 124(III) | 4 | | | |
| *Phaseolus vulgaris* | | | | | |
| PHA-E | 128 | 4 | – | oligosaccharide | + |
| PHA-L | 128 | 4 | – | oligosaccharide | + |
| PHA-P | | | | | |
| PHA-M | | | | | |

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| Lectin | MW (kDa) | Subunits | Specificity Blood Group | Specificity 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**


1. Reisfeld, R. A., et al., Isolation and Characterization of a Mitogen from Pokeweed (*Phytolacca americana*). *Proc. Nat. Acad. Sci.*, **58**, 2020-2027 (1967).
2. Kitchener, P.D. et al., Selective labeling of primary sensory afferent terminals in Lamina II of the dorsal horn by injection of *Bandeiraea simplicifolia* isolectin $B_4$ into peripheral nerves. Neuroscience, **54**, 545-551 (1993).





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