

## Product Information

### Lectin Peroxidase labeled from *Artocarpus integrifolia*

Product Number **L 4650**  
Storage Temperature 2-8 °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 glycoproteins even in presence of various detergents.<sup>1</sup> 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.

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 peroxidase labeled lectin has been used for the detection of proteins and glycopeptides bearing O-linked oligosaccharides.<sup>2,3</sup>

#### 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<sup>®</sup> 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<sub>2</sub>, 1 mM MnCl<sub>2</sub>, and 1 mM MgCl<sub>2</sub> for 16 hours at 20 °C.
5. Remove excess lectin by rinsing in PBS.
6. Peroxidase activity can be detected using standard peroxidase substrates.

#### Precautions and Disclaimer

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

#### Preparation Instructions

This peroxidase conjugate is soluble in 10 mM phosphate, pH 7.0, 150 mM NaCl (1 mg/ml), yielding a clear, light yellow solution.

#### Storage/Stability

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

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

----- Table continued on next page -----

| Lectin                             | MW (kDa)                  | Subunits | Specificity                    |                                | Mitogenic Activity |
|------------------------------------|---------------------------|----------|--------------------------------|--------------------------------|--------------------|
|                                    |                           |          | Blood Group                    | Sugar                          |                    |
| <i>Phytolacca americana</i>        | 32                        | –        | –                              | (glcNAc) <sub>3</sub>          | +                  |
| <i>Pisum sativum</i>               | 49                        | 4(αβ)    | –                              | α-man                          | +                  |
| <i>Pseudomonas aeruginosa PA-I</i> | 13-13.7                   | –        | –                              | gal                            | + <sup>c</sup>     |
| <i>Psophocarpus tetragonolobus</i> | 35                        | 1        | –                              | galNAc, gal                    |                    |
| <i>Ptilota plumosa</i>             | 65; 170                   | –        | B                              | α-gal                          |                    |
| <i>Ricinus communis</i>            |                           |          |                                |                                |                    |
| Toxin, RCA <sub>60</sub>           | 60                        | 2        | –                              | galNAc, β-gal                  |                    |
| Toxin, RCA <sub>120</sub>          | 120                       | 4        | –                              | β-gal                          |                    |
| <i>Sambucus nigra</i>              | 140                       | 4(αβ)    | –                              | αNeuNAC(2→6)gal<br>galNAc      | + <sup>c</sup>     |
| <i>Solanum tuberosum</i>           | 50; 100 <sup>a</sup> 1, 2 |          | –                              | (glcNAc) <sub>3</sub>          |                    |
| <i>Sophora japonica</i>            | 133                       | 4        | A, B                           | β-galNAc                       |                    |
| <i>Tetragonolobus purpureas</i>    | 120(A)                    | 4        | H                              | α-L-fuc                        |                    |
|                                    | 58(BA)                    | 2        | H                              | α-L-fuc                        |                    |
|                                    | 117(C)                    | 4        | H                              | α-L-fuc                        |                    |
| <i>Triticum vulgare</i>            | 36                        | 2        | –                              | (glcNAc) <sub>2</sub> , NeuNAC | +                  |
| <i>Ulex europaeus</i>              |                           |          |                                |                                |                    |
| UEA I                              | 68                        | –        | H                              | α-L-fuc                        |                    |
| UEA II                             | 68                        | –        | –                              | (glcNAc) <sub>2</sub>          |                    |
| <i>Vicia faba</i>                  | 50                        | 4(αβ)    | –                              | man, glc                       | +                  |
| <i>Vicia sativa</i>                | 40                        | 4(αβ)    | –                              | glc, man                       | +                  |
| <i>Vicia villosa</i>               | 139                       | 4        | A <sub>1</sub> +T <sub>n</sub> | galNAc                         |                    |
| A <sub>4</sub>                     | 134                       | 4        | A <sub>1</sub>                 | galNAc                         |                    |
| B <sub>4</sub>                     | 143                       | 4        | T <sub>n</sub>                 | galNAc                         |                    |
| <i>Vigna radiata</i>               | 160                       | 4        | –                              | α-gal                          |                    |
| <i>Viscum album</i>                | 115                       | 4(αβ)    | –                              | β-gal                          |                    |
| <i>Wisteria floribunda</i>         | 68                        | 2        | –                              | galNAc                         |                    |

<sup>a</sup> Concentration-dependent molecular weight

<sup>b</sup> Non-agglutinating and mitogenic

<sup>c</sup> Mitogenic for neuraminidase-treated lymphocytes

## References

1. Nagata, Y., and Burger, M. M., Wheat germ agglutinin. Molecular characteristics and specificity for sugar binding. *J. Biol. Chem.*, **249**, 3116-3122 (1974).
2. *Anal. Biochem.*, **188**, **271** (1990).

3. Hortin, G. L., *Anal. Biochem.*, **191**, **262** (1990).

TWEEN is a registered trademark of Uniqema, a business unit of ICI America, Inc.

IRB/MWM/JRC/NSB/SAG 3/03

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.