

# ABSOLUTE LECTINS

## 05-0120 Galanthus nivalis lectin (GNA)



### Benefits

- Contains little or no carbohydrate
- Binds to serum IgM and  $\alpha$ 2- macroglobulin
- Sugar specificity: structures containing ( $\alpha$ -1,3) mannose residues

### Product description

Galanthus nivalis lectin or agglutinin (GNA) is isolated from snowdrop bulbs. It has a molecular weight of 50 kDa and consists of four identical subunits (1).

The lectin is known to agglutinate rabbit erythrocytes but not human erythrocytes (1). It binds specifically to murine IgM immunoglobulin and human  $\alpha$ 2-macroglobulin. Structures containing ( $\alpha$ -1,3) mannose residues are preferred for binding (2).

It contains little or no carbohydrate and does not need  $Ca^{2+}$  or  $Mn^{2+}$  for binding, since unlike most mannose-specific lectins it is not a metalloprotein. Unlike the majority of mannose-binding lectins, GNA does not bind alpha-linked glucose. GNA has been useful in HIV research (3). It is also applicable for blood cell agglutination studies but also as a model system to help understand the molecular basis of how proteins recognize carbohydrates.

Medicago's GNA lectin is supplied as a white to cream coloured lyophilized powder. The purity of GNA lectin is determined by SDS- electrophoresis, which generates one single band at 13 kDa corresponding to the four identical polypeptide chains.

The lectin is available in plastic bottles containing 1 g or vials containing 5 mg powder and is to be used for laboratory work only.

### Applications

- Model systems to help understand the molecular basis of how proteins recognize carbohydrates
- HIV research

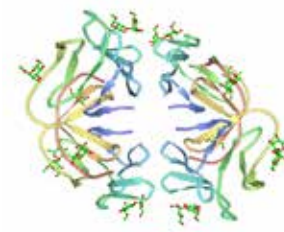


Figure 1: Crystal structure of Galanthus nivalis lectin in complex with mannose-alpha 1,3-methylmannose (2)

Specifications	Galanthus nivalis lectin (05-0120)
Appearance	White to cream coloured lyophilized powder
Source	Snowdrop bulbs
Molecular weight	52 kDa
Sugar specificity	( $\alpha$ -1,3) Man residues
Activity	Agglutinates rabbit erythrocytes, binds to murine serum IgM and human $\alpha$ 2-macroglobulin
Microorganisms	$\leq 100$ CFU/g
Shelf life	$\geq$ Five years when stored at $-20^{\circ}C$

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### Directions for use

The lectin may be reconstituted with 2 ml of deionized water before use, spin the vial gently until full dissolution. The solution may be reconstituted in this buffer to desired working concentration. Aggregation is thought to occur in the presence of high concentrations of 2-mercaptoethanol. In absence of lactose the lectin will polymerize and storage at pH 8.6–8.8 causes precipitation.

### Tips and hints

Avoid repeated freezing and thawing.

### Shipping and storage

The product is shipped at -20°C however for over-the-day transport it may be shipped at ambient temperature. The lyophilized powder is stable for more than five years from production date when stored below -20°C. After reconstitution with deionized water, the solution may be stored frozen in working aliquots for up to 12 months.

### Certifications

Medicago's laboratories and manufacturing site in Uppsala are ISO 9001:2015 certified. Each stage of the manufacturing process is controlled and monitored by stringent quality control procedures to guarantee the highest possible quality and lot-to-lot reproducibility.



### Ordering information

Article no.	Product name	Pack size
05-0120-5mg	<i>Galanthus nivalis lectin (GNA)</i>	5 mg
05-0120-1g	<i>Galanthus nivalis lectin (GNA)</i>	1 g

### References

- (1) Naoto Shibuya, Irwin J. Goldstein, Els J. M. Van Damme and Willy J. Peumans. (1988) Binding Properties of a Mannose-specific Lectin from the Snowdrop (*Galanthus nivalis*) Bulb\* J. Mol. Biol. Vol. 263, No. 2, Issue of January 15, pp. 728-734
- (2) Christine S. Wright, Hanae Kaku and Irwin J. Goldstein (1990). Crystallization and Preliminary X-ray Diffraction Results of Snowdrop (*Galanthus nivalis*) Lectin. J.Mol.Biol. Vol. 265, No. 3, Issue of January 25, pp. 1676-1677
- (3) Gilljam, G. AIDS Reserach and Human Retroviruses. May 1993; 9(5): 431–8.