ABSOLUTE LECTINS

Lens culinaris lectin (LCA/LcH)

Features

- Ultrapure quality
- Sugar specificity: α-D-mannose and α-D-glucose
- Haemagglutinating activity
- Lyophilized powder

Product description

Lens culinaris lectin or agglutinin (LCA) is isolated from *Lens culinaris* (lentil) seeds and purified by affinity chromatography. The lectin has two subunits and a molecular weight of 46 kDa (1) and it forms a complex together with sucrose (Figure 1).

Figure 1: Crystal structure of *Lens culinaris* lectin complexed with sucrose (2)

Lectins are, due to their specific binding to carbohydrate structures on the cell surface or elsewhere useful in haematology, immunology or as specific markers for membrane glycoprotein structures (2). LCA's carbohydrate specificity is D-mannose and D-glucose and the two isomers LCA-A and LCA-B agglutinates human red blood cells, although this reaction is not blood group specific. LCA is also a useful component in affinity chromatography columns for the separation of glycoconjugates (3).

Medicago's *Lens culinaris* lectin is supplied as a white lyophilized powder from 1 mM $CaCl_2$, 1 mM $MnCl_2$ and 1 mM $MgCl_2$. No preservatives are added. In isoelectric focusing, the lectin generates two major bands at pI 8.15, 8.45 and one minor band at pI 8.65 (Figure 3).The activity of the lectin is determined by haemagglutination with human blood. *Lens culinaris* lectin agglutinates a 2% suspension of human erythrocytes at a lectin concentration of ≤8 µg/ml in 0.9% saline solution (NaCl) after 2 h at 25°C.

Adding 60 mM methylmannoside yields an inhibition with a lectin titer that is at least 16-fold weaker than the control (Figure 4). Addition of Mn^{2+} and Ca^{2+} to the reconstitution buffer will enhance hemagglutination activity (1).

The the lectin is avaliable in vials containing 100 mg, 25 mg or 10 mg lyophilized powder and the product is to be used for laboratory work only.

Applications

- Haemagglutination studies
- Cell agglutination studies
- Component in affinity columns
- Separation of glycoconjugates

Directions for use

Medicago's *Lens culinaris* lyophilized lectin may be reconstituted with 2 ml of deionized water before use, spin the vial gently until full dissolution. Aggregation is thought to occur in the presence of high concentrations of 2-mercaptoethanol.

Specifications

Appearence	White lyophilized powder or flocculate
Source	Lentil seeds
Molecular weight	46 kDa
Sugar specificity	α-D-mannose and α-D-glucose
Activity	Agglutinates human erythrocytes in a 2 % blood suspension with lectin concentration ≤ 8 µg/ml in 0.9% NaCl after 2 h at 25°C.
Inhibition	Occurs with 60 mM metylmannoside at a minimum of 16-fold lower titer of lectin than the positive control, 1 mg/ml.
Microorganisms	< 100 CFU/g
Protein content	>85 % protein by OD_{280nm} (α 1mg/ml = 1.34), essentially salt free.
Identity & Purity	Isoelectric focusing, Phast gel IEF. Two major bands at pI 8.15, 8.45 and one minor at pI 8.65.
Shelf life	> Three years when stored at -20°C

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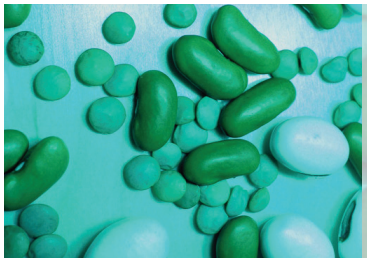

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Shipping and storage

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 three 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.

Tips and hints

Avoid repeated freezing and thawing.

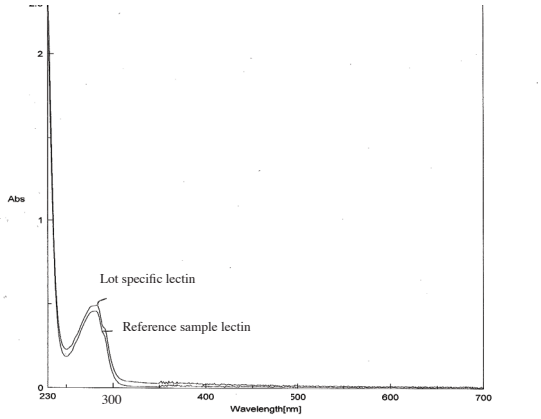

Figure 2: Absorbance measurement. *Lens culinaris* is visualized at 280 nm.

Certifications

Medicago's laboratories and manufacturing site in Uppsala are ISO 9001:2008 and ISO 13485:2003 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.

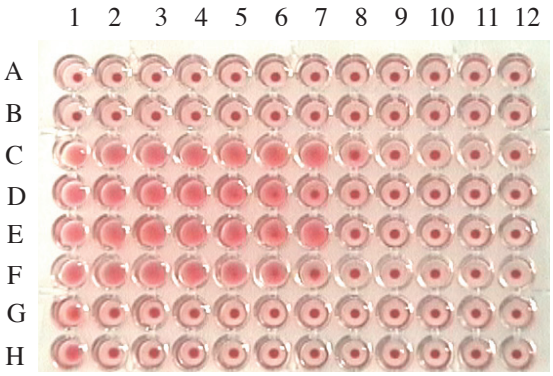

Figure 3: Heamagglutination test for *Lens culinaris,* carried out with human blood (2% in distilled water, 0.9% NaCl solution).
Lane A & B: Negative control, blood-saline solution, no agglutination.
Lane C & D: Inhibition of haemagglutination with 60mM metylmannoside.
Lane E & F: Inhibition of haemagglutination with 6 mM metylmannoside:
Lane G & H: Blood and lectin, conc.1 mg/ml, no agglutination.
C to F, 1-12: Lectin titration 0.49 µg/ml to 1 mg/ml.

Ordering information

Article no.	Product name	Pack size
05-0104-100	*Lens culinaris* lectin	100 mg
05-0104-25	*Lens culinaris* lectin	25 mg
05-0104-10	*Lens culinaris* lectin	10 mg

References

(1) Liener I. E., Sharon N., Goldstein I. J., (1986) The Lectins – Properties, Functions and Applications in Biology and Medicine.
(2)The Structure of the Lentil (Lens culinaris) Lectin Amino acid sequence determination and prediction of the secondary structure. Andre Foriers S.,Evelyne Lebrung, Roland Varnapenbuschg,Roeland de Neve, and A. Donny Strosberggy. J. Biol. Chem. 286, No 11: 5550-5560.
(3) NMR, molecular modeling, and crystallographic studies of lentil lectin-sucrose interaction. Casset, F., Hamelryck, T., Loris, R

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