

IMMOBAZYME - INSTRUCTION MANUAL



DEXTRANASE

PRODUCT OUTLINE

PRODUCT NAME

Dextranase

MANUFACTURER

Immobazyme (Pty) Ltd

BATCH DETAILS

EC 3.2.1.11 | LOT: DexD-20250123

Product Specification & Protocol: Dextranase

PRODUCT INFORMATION

Product Highlights

Dextranase is an enzyme that catalyzes the hydrolysis of dextran, a complex polysaccharide made up of glucose units linked through α -1,6-glycosidic bonds. Dextranase targets the α -1,6-glycosidic linkages in dextran, hydrolysing the dextran polymer into smaller saccharides. Dextranase enzymes are classified as glycoside hydrolases, and are found in a variety of microorganisms, including bacteria and fungi.

Dextranase plays a key role in degrading dextran, a sticky and viscous polysaccharide produced by bacteria like *Leuconostoc* and *Streptococcus* species. Dextran is present in food products, industrial processes, and dental plaque, where it can cause issues such as increased viscosity and reduced shelf life. Thus, using dextranase helps mitigate dextran's undesirable effects.

Immobazyme's recombinant Dextranase is produced in the methylotrophic yeast, *Pichia pastoris* and purified using immobilized metal ion affinity chromatography, ensuring high purity and activity for industrial applications.

PRODUCT SPECIFICATION

For Research Use Only

Grade	Food-grade, Allergen-free
Amount	1 mg per vial
Molecular Weight	63,92 kDa (with signal peptide)
Production System	<i>Pichia pastoris</i>
Specific enzyme activity	155 U/mg of protein*
Purification Method	Sequential chromatography (IMAC and desalting)
Filtration	Filtered through a 0.22 µm sterile filter
Sterility	Non-sterile; additional 0.22 µm filtration recommended

*Specific activity calculated based off a Blue Dextran 2000 hydrolysis assay.

Mycoplasma	Absent
Form	Lyophilized recombinant protein
Purity	>95% (SDS-PAGE)
Reconstitution Recommendation	1 mL of sterile MilliQ water
Formulation	10 mM Na ₂ HPO ₄ , 1.8 mM KH ₂ PO ₄ , 2.7 mM KCl, 100 mM NaCl, pH 7.4, 5% mannitol
Storage Condition	Lyophilized sample is transported at ambient temperature. For extended shelf life, store at -20°C before and after reconstitution.

RECONSTITUTION PROTOCOL AND STORAGE

Reconstitute Dextranase

Perform reconstitution in a sterile laminar flow hood.

- Remove red safety cap from vial.
- Aspirate 1mL of sterile milliQ water into a 1mL sterile syringe.
- Attach a sterile needle onto the syringe and insert into the vial through the centre of the rubber stopper seal.
- Gently inject the 1mL of water into the vial, then remove the needle and syringe.
- Invert the vial 5-10 times, or until the lyophilised sample is fully reconstituted.
- Insert the needle and syringe into the reconstituted sample vial, invert the vial and gently aspirate the sample liquid into the 1mL syringe, being sure to collect the full volume by keeping the needle end near the rubber stopper opening.
- Inject the reconstituted 1mL sample into a sterile microfuge tube through a 0.22µm syringe filter (provided).
- Prepare stock concentrations in sterile microfuge tubes as per your relevant standard operating procedures, keeping in mind the avoidance of repeated freeze-thaw cycles.
- Prepare working concentration stocks in sterile microfuge tubes as per your relevant standard operating procedures.

Storage Instructions:

- The lyophilized vial can be stored at -20 °C for 12 months.
- The reconstituted protein aliquots can be stored at -20°C for 6 months.
- Once resuspended use within 1 week (storage at 4°C).

Important Notes:

- Avoid repeated freeze-thaw cycles.

QUALITY CONTROL & PERFORMANCE TESTING

Purity Verification: SDS-PAGE and Coomassie staining

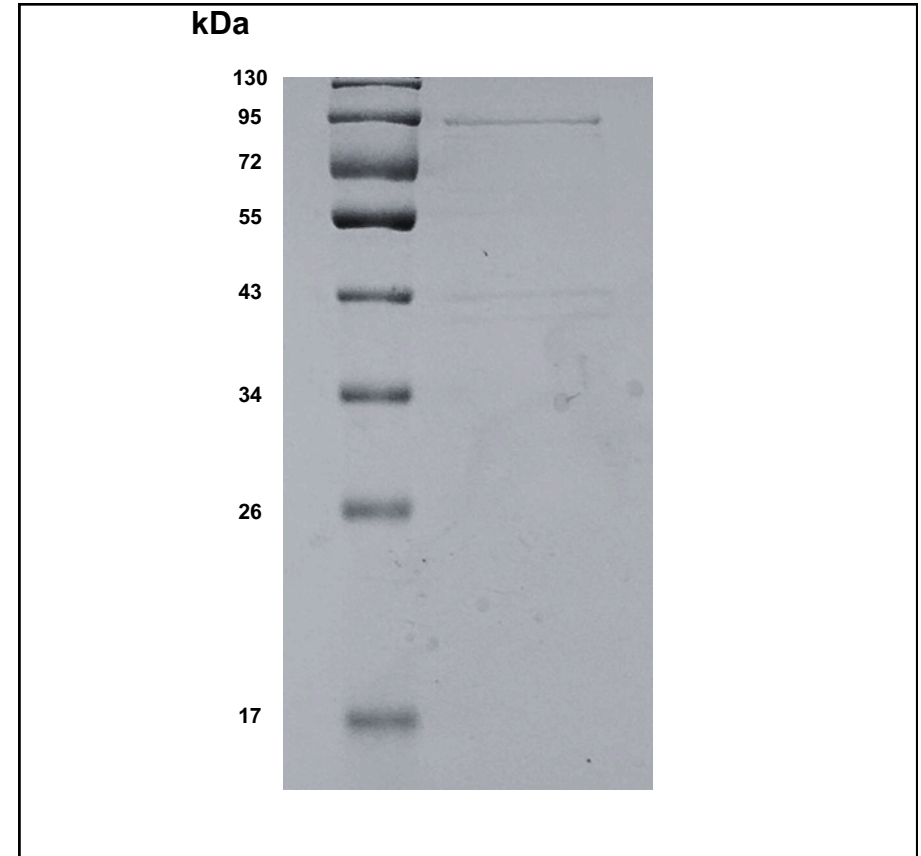


Figure 1. Dextranase (LOT: DexD-20250123) run on an SDS-PAGE gel after lyophilization. A prominent band was present at ~90 kDa* with ~90% purity.

*Note that the dextranase SDS band migrates from the stated protein size due to post-translational modification effects.

Effect of Dextranase (LOT: DexD-20250123) on the hydrolysis of Dextran T500 polysaccharide gum

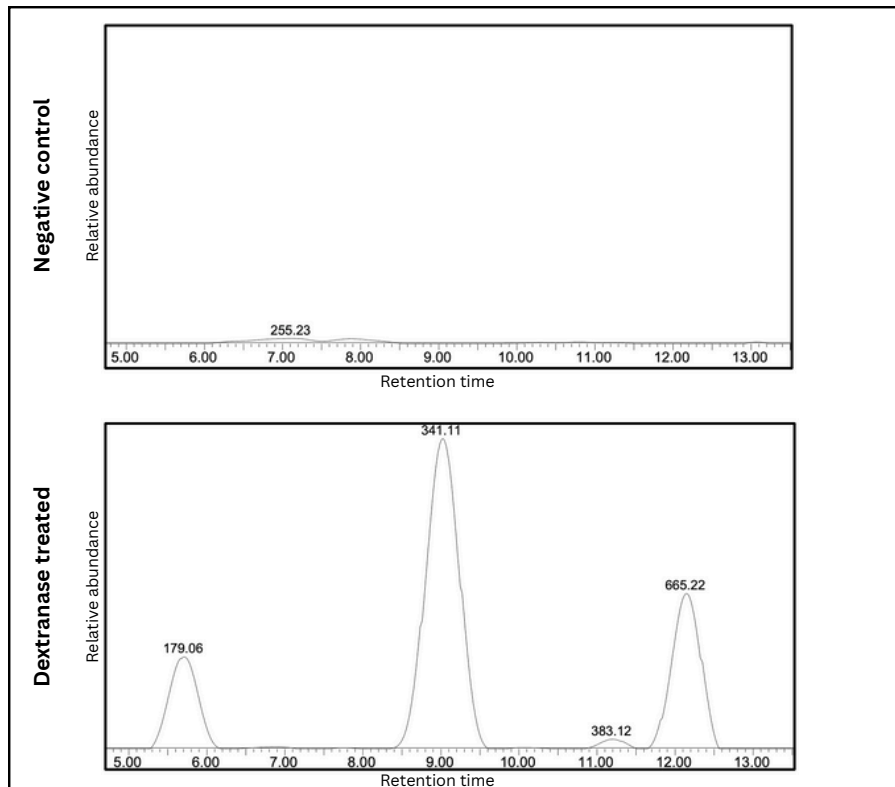


Figure 2. Role of Dextranase (LOT: DexD-20250123) on the hydrolysis of Dextran T500 polysaccharide gum.

The top chromatogram portrays LCMS data of an untreated Dextran T500 polysaccharide sample, showing the absence of simple saccharide peaks. The lower chromatogram portrays LCMS data of a Dextran T500 polysaccharide sample treated with Immobazyme's Dextranase enzyme at 50°C for 10 min. These graphs illustrate the hydrolytic effect of Immobazyme's Dextranase on Dextran T500, resulting in the breakdown of this complex polysaccharide into simple mono-, di-, and trisaccharides.

Dextranase (LOT: DexD-20250123) activity assay on the hydrolysis of Blue Dextran 2000

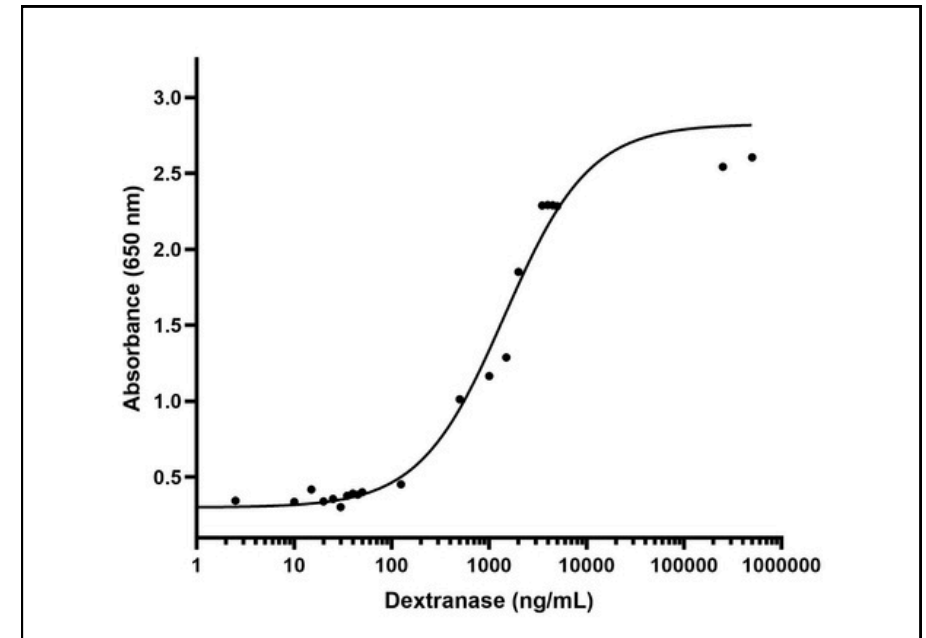


Figure 3. Dextranase enzyme activity against the substrate Blue Dextran 2000.

The plot shows absorbance at 650 nm as a function of Dextranase concentration (ng/mL) on a logarithmic scale. Enzyme activity was measured based on the release of Cibacron blue 3GA dye from Blue Dextran 2000, with increasing absorbance indicating higher enzymatic degradation of the substrate. Data points represent individual measurements, and the curve represents a sigmoidal fit of the dose-response relationship.

Mycoplasma

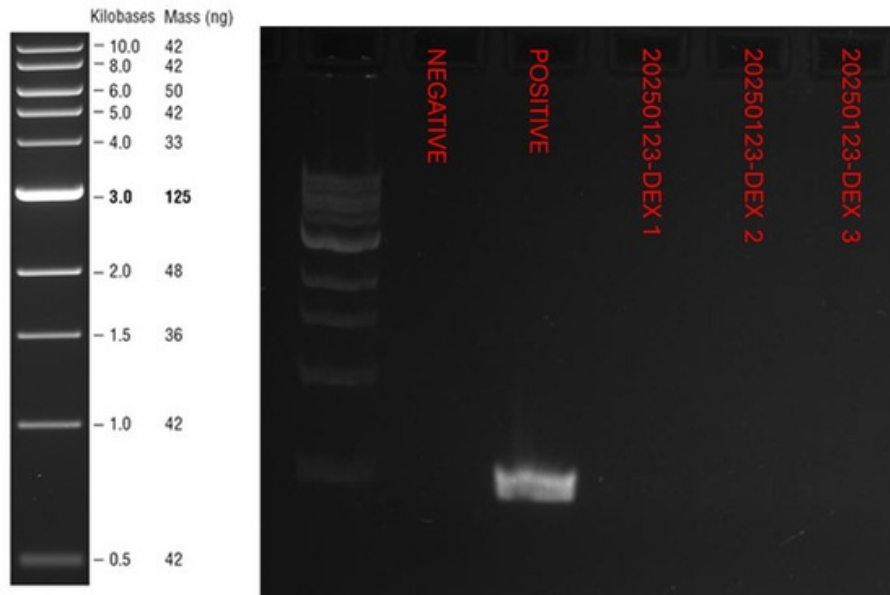


Figure 4. Mycoplasma detection via PCR on Dextranase (LOT: DexD-20250123). No amplification of the PCR product indicates that the samples are free of the mycoplasma contamination.