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07665E_1109_0

Product No. 07665

ZYMOLYASE®-100T (from *Arthrobacter luteus*)

Source: *Arthrobacter luteus*

Description: ZYMOLYASE®-100T, produced by a submerged culture of Arthrobacter luteus[1], is a new enzyme preparation which lyses effectively cell walls of viable yeast cells[2], [3]. This Enzyme is a preparation partially purified by affinity chromatography[9].

An essential enzyme responsible for lysis of viable yeast cells in this preparation is β-1,3-glucan laminaripentaohydrolase. It hydrolyzes linear glucose polymers with β-1,3-linkages and releases specifically laminaripentaose as the main and minimum product unit[4],[5],[10],[11].

The extent of lysis of yeast cells by ZYMOLYASE®-100T varies with yeast strain, growth stage of yeast, or cultural condition[6-8].

ZYMOLYASE®-100T shows 100,000 units/g of the lytic activity, defined after, toward brewer's yeast cells (*Saccharomyces cerevisiae*, resting stage) or toward yeast cells of *Saccharomyces cerevisiae* IFO 0565 cultured statically in malt extract medium (malt extract 2g, peptone 0.5g, water 100ml) at 20°C for 34hr.

Further informations related to ZYMOLYASE® are obtained in the references sited below[12-16].

Specifications:

Activity	100,000units/g	
Contaminants	β-1, 3-glucanase	1.0×10^7 units/g
	Protease	1.7×10^4 units/g
	Mannanase	6.0×10^4 units/g
	(See reference No.3 as to the definition of each enzyme units. Each activity varies more or less amount lots.)	
Essential Enzyme	β-1, 3-glucan laminaripentaohydrolase	
Appearance	Lyophilized powder	
Optimum pH and temperature	pH7.5, 35°C (for lysis of viable yeast cells) pH6.5, 45°C (for hydrolysis of yeast glucan)	
Stable pH	5-10	
Heat stability	The lytic activity is lost on incubation at 60°C for 5 minutes.	
Specificity (Lytic spectrum)[5]	*Ashbya, Candida, Debaryomyces, Eremothecium, Endomyces, Hansenula, Hanseniaspora, Kloekera, Kluyveromyces, Lipomyces, Metschnikowia, Pichia, Pullularia, Torulopsis, Saccharomyces, Saccharomycopsis, Saccharomycodes, Schwanniomyces*, etc.	
Activator	SH compound such as cysteine, 2-mercaptoethanol or dithiothreitol	

Unit Definition: One unit of lytic activity is defined as that amount which indicates 30% of decrease in absorbance at 800nm (A_{800}) of the reaction mixture under the following condition.

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Assay for Enzyme Activity:

Method

[Reaction mixture]

Substrate and Buffer solution:	Brewer's yeast cell suspension (2mg dry weight/ml)	3mL
	M/15 Phosphate buffer, pH7.5	5mL
Enzyme solution:	0.012-0.024mg/mL solution	1mL
Distilled water		1mL
Total volume		10mL

[Procedure]

After incubation for 2 hours at 25°C with gentle shaking, A_{800} of the mixture is determined. As a reference,1ml of distilled water is used instead of enzyme solution.

Calculation

Percentage decrease in A_{800} = (A_{800} of reference – A_{800} of reaction mixture) × 100/ initial A_{800} of reference

When 60% of A_{800} decrease, equivalent to 2 units, is observed in the reaction system, the brewer's yeast cells are completely lysed, namely, 1 unit of ZYMOLYASE®-100T lyses 3mg dry weight of brewer's yeast.

Precautions on use: Use a sterilized filter except nitrocellulose when a sterilized enzyme solution is needed. Use as suspension, since the solubility of ZYMOLYASE®-100T is very low. In case of using a sterilized enzyme solution more than 0.05%, dissolve ZYMOLYASE®-100T with a buffer solution (pH 7.5) containing 5% glucose to make 2% solution, remove insoluble substance, filtrate with a sterilized filter, and dilute.

Storage: Stable for at least 1 year at 2°C. About 90% of the lytic activity is lost when stored at 30°C for 3 months.

References:

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Note: For *in vitro* research use only, not for diagnostic or therapeutic use. This product is not a medical device.

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