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Technical Product Data Sheet

Tech. Sheet #	001	**Version**	2.4	**Created:**	April 12th 2013	**by**	MT. Monsalves	**Last updated**	July 15th, 2022	**by**	P.Cáceres
Product Name	Recombinant catalase			**Product Code**	enz_cat_001	**Current Dev. Phase**		Finished			

Core information

Product Type	Recombinant enzyme	**Producing microorganism**	*Escherichia coli* (recombinant)	**Microorg. code**	BL21	**Origin**	Psychrotolerant Bacteria
EC Number	1.11.1.6			**CAS-No.**	9001-05-2		
Product Description	Catalase (CAT) is an oxidoreductase enzyme that catalyses the decomposition of hydrogen peroxide into molecular oxygen and water.						

Temp Range ºC	20-80	**Opt. temp ºC**	30-40	**Thermo stability**	Keeps 50% of its activity after 7 hours of exposure at 50°C	**pH range**	4.0-11	**Opt. pH**	7.5

Substrate	H_2O_2
Products	H_2O and O_2
Reaction	$2\ H_2O_2 \longrightarrow 2\ H_2O + O_2$
U (Unit definition)	One unit is defined as the decomposition of 1µmol of H_2O_2 in 1 minute at 25°C at pH 7.0. The rate of disappearance of H_2O_2 is observed at 240 nm.
Specific activity	≥ 8000 U/mg protein (after freezing and thawing)

Molecular mass	≈ 220 kDa	**Number of subunits**	Four. Each subunit has ≈ 55 kDa.

Substrate chirality	No data available
Product chirality	No data available
Alternative substrates	Not determined
Form	Solution
Other components	0.05M Tris HCl pH 8, 0.5M NaCl and glycerol at 20% v/v
Storage temperature	-20°C
Stability	At -20°C, it maintains the reported activity (≥ 8000 U/mg) at least for 18 months.
Shipping conditions	Inside a Styrofoam box with icepacks

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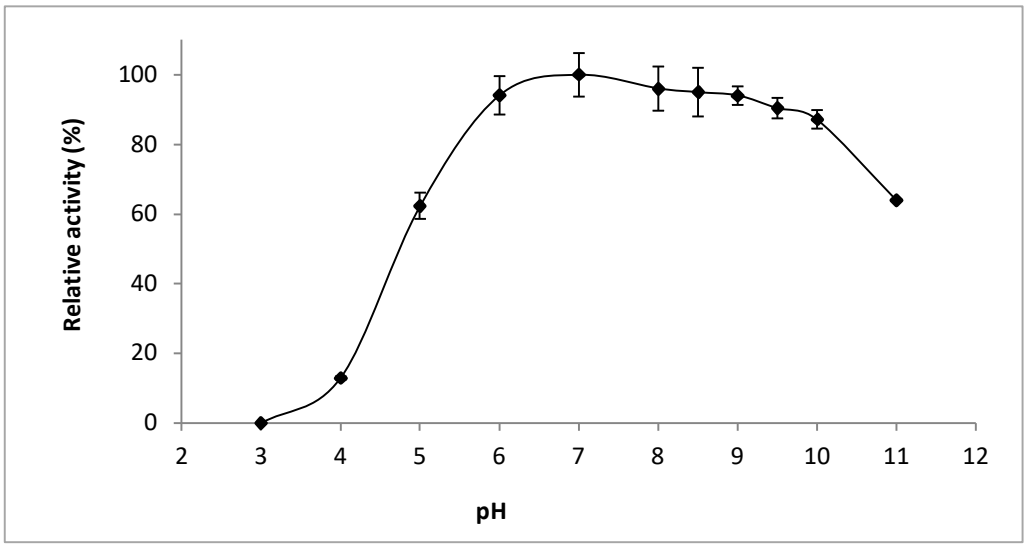
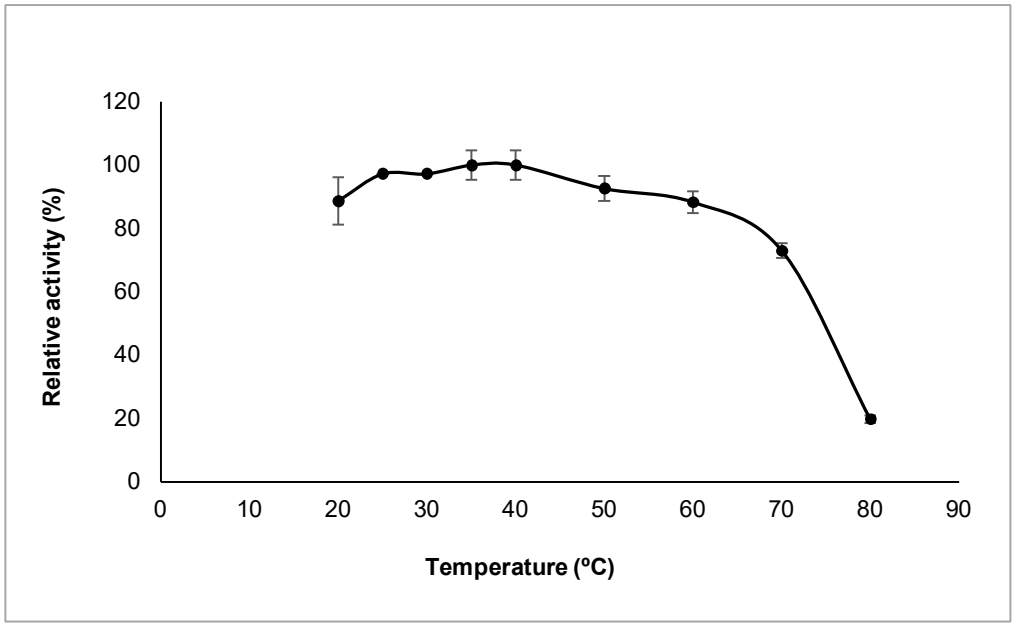
pH dependence	 **Fig 1.** pH dependence of the rec CAT (enz_cat_001). Activity was measured by monitoring pH from 3 to 11 at 25ºC.
Temperature dependence	 **Fig 2.** Temperature dependence of the rec CAT (enz_cat_001). Activity was measured by monitoring temperature from 20 to 80ºC using 50 mM potassium phosphate buffer (pH 7.0).

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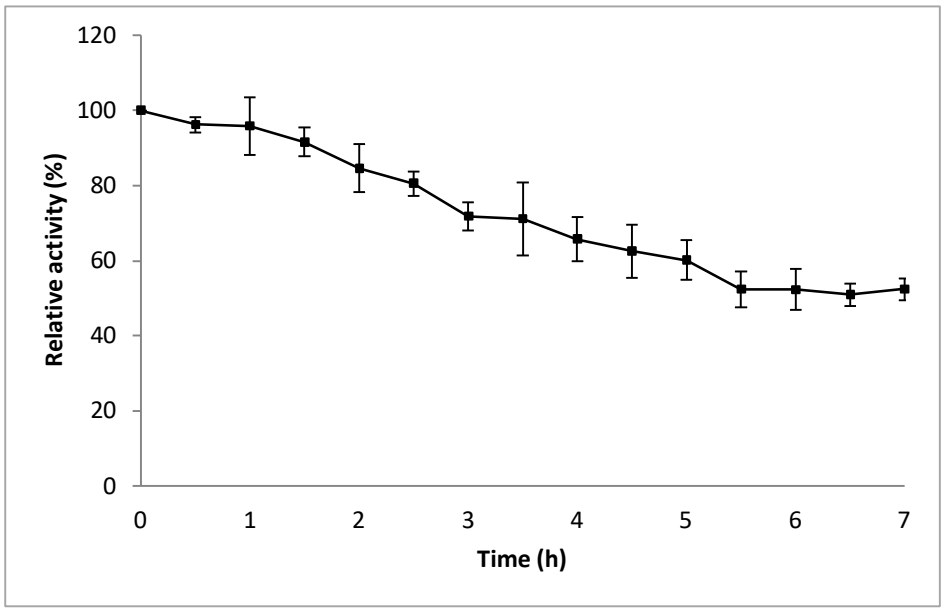
Thermo-stability	 **Fig 3.** Thermostability of the rec CAT (enz_cat_001). Activity was monitored at 50º C using 50 mM potassium phosphate buffer (pH 7.0).

Scientific and Technical References

1. Yoon-Suk Kang et al. (2006) Purification and Characterization of a Catalase from Photosynthetic Bacterium *Rhodospirillum rubrum* S1 Grown under Anaerobic Conditions. *Journal of Microbiology* Vol 44: 185-191.
2. Yi Li and Herb E. Schellhorn. (2007) Rapid Kinetic Microassay for Catalase Acivity. *Journal of Biomolecular* Techniques Vol. 18: 185-187.
3. Leo Pine et al. (1984) Determination of Catalase, Peroxidase, and Superoxide Dismutase Within the Genus Legionella. *Journal Clinical Microbiology* Vol 30: 421-429
4. Sigma Aldrich: http://www.sigmaaldrich.com/technical-documents/protocols/biology/enzymatic-assay-of-catalase.html

Use, Security, Handling and Disclaimer

Use	The product specified in this document has not been assessed for Human or Animal Consumption and is therefore **Not for Human or Animal Consumption**.
Security	The product specified in this document must be manipulated and used in a safe manner, in compliance with all applicable laws and regulations.
Handling	The product specified in this document must be manipulated by trained personnel, acquainted with laboratory security practices and regulations.

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