GDH

Recombinant Bacterial

GLUTAMATE DEHYDROGENASE

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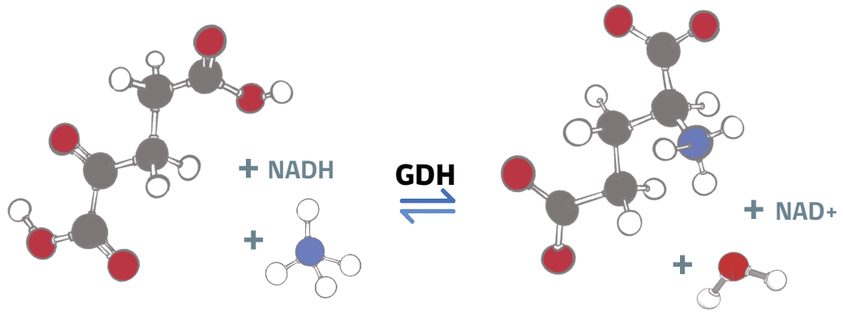
Enzymes from extremophiles (extremozymes) are inherently more stable, active and robust than their mesophilic counterparts.

Glutamate dehydrogenase enzymes are efficient biocatalysts that catalyze the reduction of α-ketoglutarate and ammonia to L-glutamate and vice-versa. They play a key role in nitrogen metabolism.



Swissaustral has developed a High-performance™ GLUTAMATE DEHYDROGENASE enzyme product

It is derived from an extremophilic bacterium that grows optimally at 50 °C, pH 8.0 (thermoalkaliphile)

Swissaustral GDH

is more active than bovine liver glutamate dehydrogenases in a broad range of temperatures (30 - 70 °C)

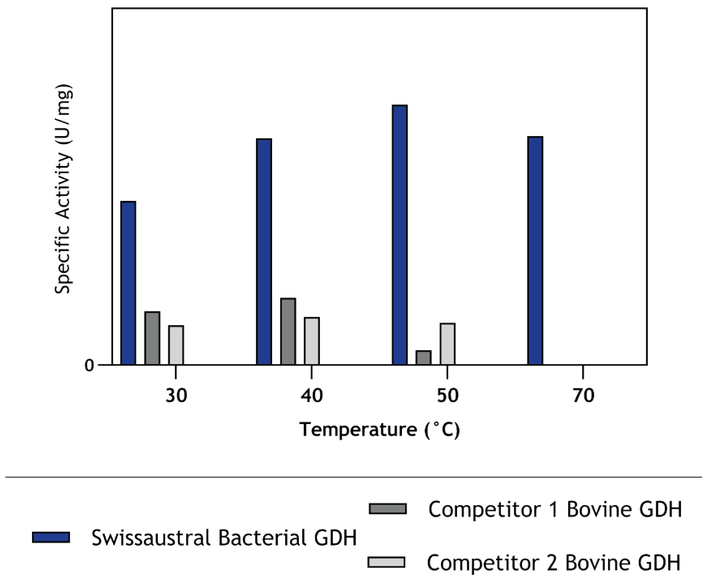


Figure 1. Comparison of the specific activity at different temperatures of three commercial glutamate dehydrogenases. Swissaustral bacterial GDH, and two others from bovine liver. Unit definition (*).

GLUTAMATE DEHYDROGENASE

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Key Characteristics

Extremely reliable: maintains over 50% of its catalytic activity in a wide range of temperatures (30 - 70 °C), with optimal activity at 50 °C.

Exceptional thermostability: maintains over 85% of its activity after 8 h at 50 °C.

Optimal activity at 50 °C and pH 8.0, making it ideal for industrial processes requiring heat resistance.

Potential Applications

Clinical Diagnostics
GDH is used in enzyme assays to detect ammonium and glutamate metabolism in plasma. Biomarker for liver function tests and metabolic disorders.

Food & Beverage
Aroma and flavor development in cheese. Ammonia determination analysis in wine production. GDH-based assays to detect spoilage in perishable foods.

Chemical Synthesis
Optimization of biosynthetic pathways to produce L-amino acids and biochemical precursors for supplements and pharmaceuticals.

Animal Nutrition
GDH helps improve protein utilization in animal diets. Optimization of amino acid metabolism in livestock feed, enhancing growth efficiency.

Bioenergy
Use of GDH in anodes of enzymatic biofuel cells. Application in redox cofactor recycling processes within bioelectrochemical systems.

Biotechnology
Application in substrate amination reactions, with potential for producing eco-friendly herbicides such as phosphinothricin.

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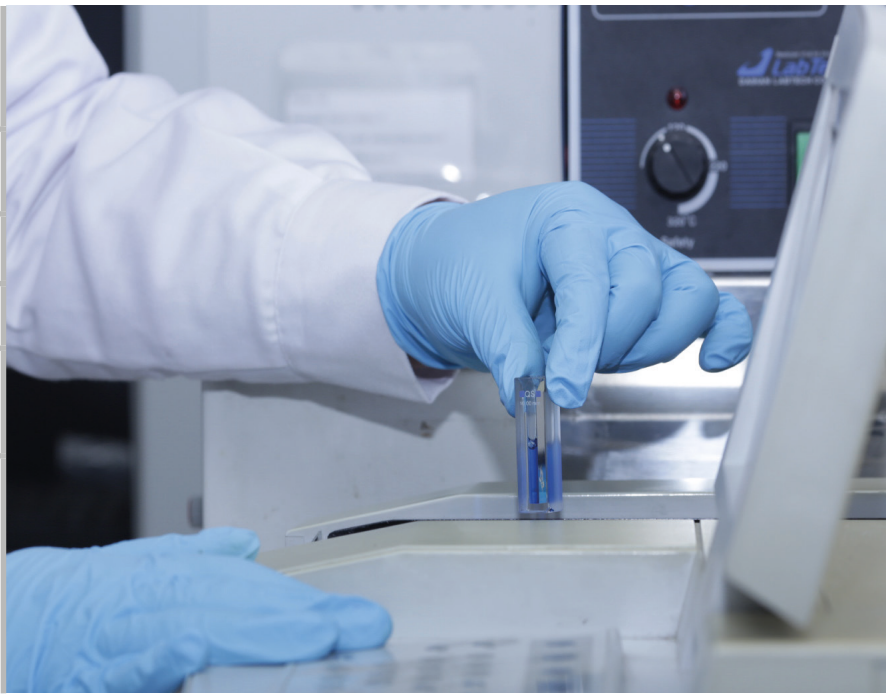
Specifications

Enzyme name:	**GLUTAMATE DEHYDROGENASE** (NAD+ - glutamate oxidoreductase)
EC number:	EC 1.4.1.2
CAS number:	9001-46-1
Molecular mass:	~ 270 kDa
Number of subunits:	Six. Each subunit has ≈ 45 kDa
Production source:	From thermophilic origin. Fast and sustainable recombinant production in a non-pathogenic *Escherichia coli* strain. Free from any animal or plant related contamination.
Unit definition (*):	One glutamate dehydrogenase unit (U) is defined as the conversion of 1 µmol of α-ketoglutarate into glutamate per minute at 50 °C, pH 8.0
Temperature range:	20 - 70 °C (optimal: 50 °C)
pH range:	7.0 -8.5 (optimal: 8.0)
Thermal stability:	Maintains over 85% of its activity after 8 h at 50° C

Available format

	Lyophilized GDH
Product Number	**enz_gdh_003**
Presentation	Lyophilized powder
Activity	≥ 90 U/mg
Other components	0.05M Tris Buffer pH 8.0, 0.5M NaCl
Storage conditions	At -20 °C, it maintains the reported activity (≥ 90 U/mg) for at least 14 months



Disclaimer: Swissaustral enz_gdh_003 is not produced in a GMP facility. This enzyme product is for research purposes only and not intended for human or animal consumption or applications.

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