

ENZYMES

BY

SORACHIM

Malate Dehydrogenase from microorganism

MAD-211

SPECIFICATIONS

Product name	L-malate: NAD ⁺ oxidoreductase
EC	1.1.1.37
Appearance	Slightly yellowish amorphous powder, lyophilized
Activity	Grade II, 40 U/mg-solid or more
Contaminants	Glutamate oxaloacetate transaminase $\leq 1.0 \times 10^{-3}\%$ Lactate dehydrogenase $\leq 1.0 \times 10^{-3}\%$ NADH oxidase $\leq 1.0 \times 10^{-3}\%$
Stability	Stable at - 20°C for at least 12 months
Molecular weight	Approx. 140,000
Isoelectric point	pH 4.8 \pm 0.1
Michaelis constants	5.4 $\times 10^{-5}$ M (L-Malate), 5.0 $\times 10^{-6}$ M (Oxaloacetate) 8.1 $\times 10^{-6}$ M (NADH)
Structure	4 subunits per mole of enzyme
Inhibitors	Hg ²⁺
Optimum pH	8.0
Optimum temperature	70°C
pH Stability	pH 3.0 - 9.0 (25°C, 20hr)
Thermal stability	Below 70°C (pH 7.5, 15min)

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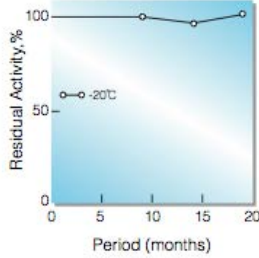


Fig.1. Stability (Powder form)
(kept under dry conditions)

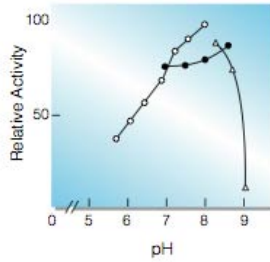


Fig.2. PH-Activity

[30°C, in 0.1M buffer solution:
pH5.5-8.0, K-phosphate;pH7.0-8.5, Tris-HCl;
pH8.0-9.0, Borate

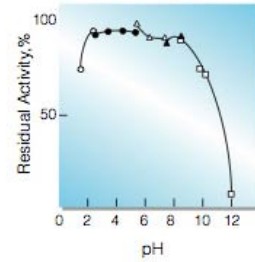


Fig.4. pH-Stability

[25°C, 20hr-treatment with 0.1M buffer solution:
pH2.0-3.5, glycine-HCl; pH3.0-6.0, acetate;
pH6.0-8.0, K-phosphate; pH8.0-9.0, Tris-HCl;
pH8.5-12.0, borate

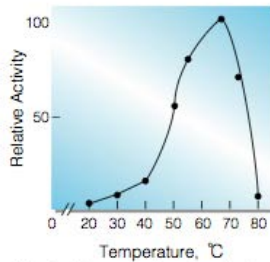


Fig.3. Temperature activity

(in 0.1mM K-phosphate buffer, pH7.5)

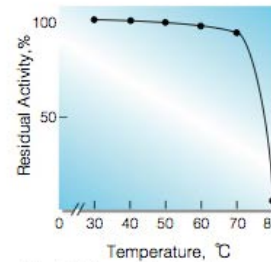


Fig.5. Thermal stability

[15min-treatment with 0.1m K-phosphate
buffer, pH7.5
enzyme concentration:4.0U/ml