

## Native Microorganism Malate Dehydrogenase

Cat. No. DIA-160

Lot. No. (See product label)

### Introduction

**Description** Malate dehydrogenase is an enzyme in the citric acid cycle that catalyzes the conversion of malate into oxaloacetate (using NAD<sup>+</sup>) and vice versa (this is a reversible reaction). Malate dehydrogenase is not to be confused with malic enzyme, which catalyzes the conversion of malate to pyruvate producing NADPH. Malate dehydrogenase is also involved in gluconeogenesis, the synthesis of glucose from smaller molecules. Pyruvate in the mitochondria is acted upon by pyruvate carboxylase to form oxaloacetate, a citric acid cycle intermediate. In order to get the oxaloacetate out of the mitochondria, malate dehydrogenase reduces it to malate, and it then traverses the inner mitochondrial membrane. Once in the cytosol, the malate is oxidized back to oxaloacetate by cytosolic malate dehydrogenase. Finally, phosphoenol-pyruvate carboxy kinase (PEPCK) converts oxaloacetate to phosphoenol pyruvate.

**Applications** This enzyme is useful for enzymatic determination of L-malate and of glutamate oxaloacetate transaminase (GOT) in clinical analysis.

**Synonyms** malic dehydrogenase; L-malate dehydrogenase; NAD-L-malate dehydrogenase; malic acid dehydrogenase; NAD-dependent malic dehydrogenase; NAD-malate dehydrogenase; NAD-malic dehydrogenase; malate NAD dehydrogenase; NAD-dependent malate dehydrogenase; NAD-sp; ECific malate dehydrogenase; NAD-linked malate dehydrogenase; MDH; L-malate-NAD<sup>+</sup> oxidoreductase; S-malate: NAD<sup>+</sup> oxidoreductase; EC 1.1.1.37; Malate Dehydrogenase

### Product Information

<b>Source</b>	Microorganism
<b>Appearance</b>	Slightly yellowish amorphous powder, lyophilized
<b>Form</b>	Freeze dried powder
<b>EC Number</b>	EC 1.1.1.37
<b>CAS No.</b>	9001-64-3
<b>Molecular Weight</b>	approx. 140 kDa
<b>Activity</b>	Gradell 40U/mg-solid or more
<b>Contaminants</b>	Glutamate oxaloacetate transaminase < 1.0×10 <sup>-3</sup> % Lactate dehydrogenase < 1.0×10 <sup>-3</sup> % NADH oxidase< 1.0×10 <sup>-3</sup> %
<b>Isoelectric point</b>	pH 4.8±0.1
<b>pH Stability</b>	pH 3.0-9.0 (25°C, 20hr)
<b>Optimum pH</b>	8
<b>Thermal stability</b>	below 70°C (pH 7.5, 15min)
<b>Optimum temperature</b>	70°C
<b>Michaelis</b>	5.4×10 <sup>-5</sup> M (L-Malate) 5.0×10 <sup>-6</sup> M (Oxaloacetate) 8.1×10 <sup>-6</sup> M (NADH)

***Michaelis Constant***  $5.4 \times 10^{-4} \text{ M}$  (L-Malate),  $5.0 \times 10^{-4} \text{ M}$  (Oxalodacetate),  $0.1 \times 10^{-4} \text{ M}$  (NADH)

***Structure*** 4 subunits per mole of enzyme

***Inhibitors***  $\text{Hg}^{++}$

### ***Storage and Shipping Information***

***Stability*** Stable at -20°C for at least one year