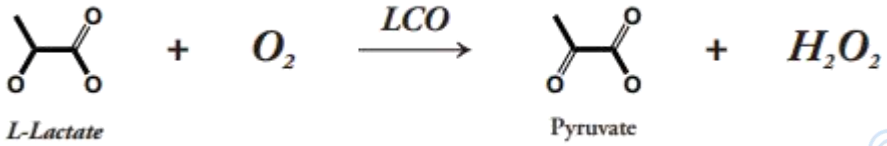
Recombinant Lactate Oxidase (LOX)

L774072

Lactate oxidase catalyzes the oxidation of lactate to pyruvate and hydrogen peroxide in the presence of an FMN co-factor. The enzyme aids in the determination of L-lactate indirectly by measuring the hydrogen peroxide formed in the reaction.

Reaction



Product description

Appearance:	Yellow amorphous powder
Source:	Microorganism
Enzyme Commission Number:	EC 1.1.3.2
CAS Number:	9028-72-2
Storage temperature:	-20℃
Activity:	⩾100U/mg enzyme powder; ⩾250U/mg protein
Unit definition	One unit will convert one micromole of L-Lactate to pyruvate per min at pH 7.5 at 37℃.

Properties

Molecular weight:	40kDa (SDS-PAGE)	
Isoelectric point:	5.2	
Michaelis constant:	1.1×10^{-3}M (L-Lactate)	
Optimum pH:	6.5-8.0	{Fig. 1}
Optimum temperature:	37℃-40℃	{Fig. 3}
pH Stability:	5.0-10.0 (25℃, 20hr)	{Fig. 2}
Thermal stability:	< 50℃ (pH 7.0, 30min)	{Fig. 4}
Inhibitors:	Cu^{2+}, Fe^{3+}, Zn^{2+}, SDS	
Effect of various chemicals:		{Table 1}

Storage Conditions

Store at -20℃ long term (2 years). Upon reconstitution, it is recommended to aliquot. Avoid freeze/thaw cycle. Store in the dark. Desiccated.

Table 1.

Effect of Various Chemicals on LOX

[The enzyme dissolved in 50mM Tris-HCl buffer, pH 7.5 (50U/ml) was incubated with each chemical at 37℃ for 2hr.]

Chemical	Concn. (mM)	Residual activity
None	-	100%
$CaCl_2$	2.0	110%
$CoCl_2$	2.0	98%
$CuSO_4$	2.0	23%
$FeCl_3$	2.0	52%
$MgSO_4$	2.0	100%
$MnSO_4$	2.0	97%
$NiCl_2$	2.0	89%
$ZnSO_4$	2.0	76%
$K_4Fe(CN)_6$	2.0	100%

Chemical	Concn. (mM)	Residual activity
BME	2.0	98%
NEM	2.0	91%
EDTA	5.0	97%
NaN_3	20.	0 97%
Proclin	0.045%	94%
Na-cholate	0.10%	105%
SDS	0.05%	0%
Triton X-100	0.10%	99%
Tween 20	0.10%	98%

Fig. 1 pH Activity

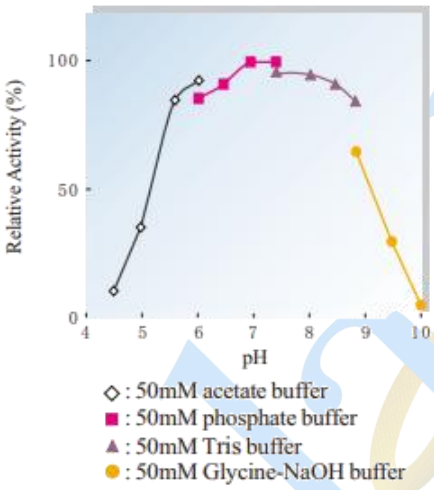
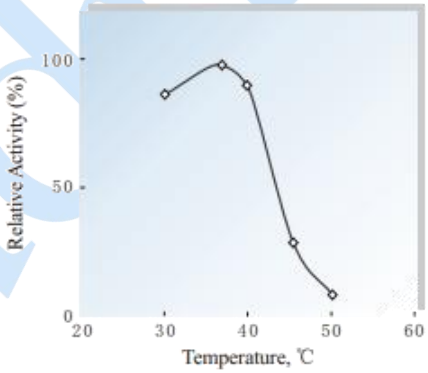
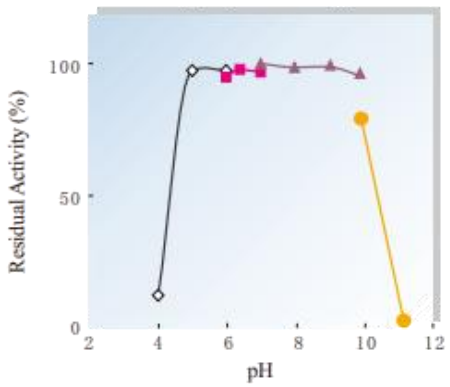


Fig. 3 Temperature activity



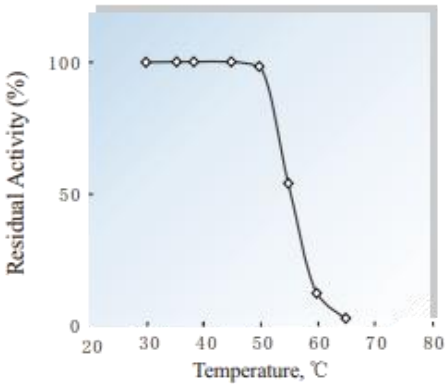
Buffer: 20mM K-phosphate buffer , pH 7.0

Fig. 2 pH Stability



Treatment : 25℃, 20hr
◇ : 50mM acetate buffer
■ : 50mM phosphate buffer
▲ : 50mM Tris buffer
● : 50mM glycine buffer

Fig. 4 Thermal stability



Treatment: 20mM K-phosphate buffer, pH 7.0, 30min