ALPHA DIAGNOSTIC INTERNATIONAL

Product Data Sheet

Cat#POX-01	Pyranose Oxidase (3 U/mg material)	**Size:** □ 1 KU
Cat#POX-02	Pyranose Oxidase (3 U/mg material)	**Size:** □ 250U

Pyranose oxidase (POX) (glucose-2-oxidase) has been shown to catalyze the oxidation of several carbohydrates at the second carbon atom to yield 2-keto products and hydrogen peroxide.4 ~7) and is widely distributed among wood-degrading basidiomycetes.

It has been purified and characterized from several microorganisms, including Phanerochaete chrysosporium, Phlebiopsis gigantea, Pleurotus ostreatus, Polyporus obtusus, Trametes (Coriolus) versicolor, and unidentified basidiomycete no. 52. The currently available data reveal some general similarities among P2Os from these different fungi.

POX is a homotetrameric protein that contains covalently bound flavin adenine dinucleotide (FAD). The in vivo substrates of POX are thought to be D-glucose, D-galactose, and D-xylose. They are oxidized to 2-keto-D-glucose (D-arabino-hexos-2-ulose, 2-dehydro-D-glucose), 2-keto-D-galactose (D-lyxo-hexos-2-ulose, 2-dehydro-D-galactose), and 2-keto-D-xylose (D-threopentos-2-ulose, 2-dehydro-D-xylose), respectively. Pyranose oxidase has significant activity with carbohydrates such as, L-sorbose, D-glucono-1,5-lactone, and D-allose. When pyranose oxidase catalyzes the oxidation of aldopyranoses, electrons are transferred to molecular oxygen which results in the formation of hydrogen peroxide1.

Immunocytochemical and ultrastructural studies of POX produced by the lignocellulose-degrading fungi P. chrysosporium and Oudemansiella mucida under liquid culture conditions or during wood decay revealed that POX was localized primarily in the periplasmic space. During later stages of development, when autolysis occur, is it located extracellularly, and under these circumstances it is primarily associated with fungal cell walls or with extracellular slime. This preferential periplasmic distribution is consistent with previous reports of H2O2 production in white rot fungi under ligninolytic conditions. Hydrogen peroxide produced by POX in the periplasmic space of fungal hyphae or extracellularly may function in situ with two lignin-degrading oxidative enzymes, lignin peroxidase and manganese peroxidase, for which H2O2 is an essential cosubstrate.

POX is used for the determination of D-glucose and 1,5-anhydroglucitol in clinical analysis. It is used to study the biotransformations of carbohydrates and is used as an important marker for glycemic control in diabetes patients.

Enzymatic Activity Unit Definition
One unit produces 1.0 µmol of hydrogen peroxide per minute at 37 °C, pH 7.0.

Form and Storage
Recombinant protein is expressed in E. coli and supplied in lyophilized form. It is shipped at 2-8oC and must be stored at -20°C on arrival.

Suggested applications
WB Control, ELISA reference standard, Optimal concn should be tested for a given application.

References:
Leitner C, Volc J, and Haltrich D (2001) Appl Environ Microbiol. Aug; 67(8): 3636–3644. Ruelius HW et al (1968) Biochim Biophys Acta.;167(3):493-500.

This product is for in vitro research use only.

Related items available from ADI

Catalog#	**Prod Description**	
POX-01-Pyranose-Oxidase		160126SV

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