

CYP102A1 Protein, *Priestia megaterium* (*P. pastoris*, His)

Cat. No.:	HY-P700629
Synonyms:	Bifunctional cytochrome P450; NADPH--P450 reductase; Cytochrome P450BM-3; Fatty acid monooxygenase; Flavocytochrome P450 BM3
Species:	Others
Source:	<i>P. pastoris</i>
Accession:	P14779 (T2-R472)
Gene ID:	/
Molecular Weight:	55.2 kDa

PROPERTIES

AA Sequence	<p> T I K E M P Q P K T F G E L K N L P L L N T D K P V Q A L M K I A D E L G E I F K F E A P G R V T R Y L S S Q R L I K E A C D E S R F D K N L S Q A L K F V R D F A G D G L F T S W T H E K N W K K A H N I L L P S F S Q Q A M K G Y H A M M V D I A V Q L V Q K W E R L N A D E H I E V P E D M T R L T L D T I G L C G F N Y R F N S F Y R D Q P H P F I T S M V R A L D E A M N K L Q R A N P D D P A Y D E N K R Q F Q E D I K V M N D L V D K I I A D R K A S G E Q S D D L L T H M L N G K D P E T G E P L D D E N I R Y Q I I T F L I A G H E T T S G L L S F A L Y F L V K N P H V L Q K A A E E A A R V L V D P V P S Y K Q V K Q L K Y V G M V L N E A L R L W P T A P A F S L Y A K E D T V L G G E Y P L E K G D E L M V L I P Q L H R D K T I W G D D V E E F R P E R F E N P S A I P Q H A F K P F G N G Q R A C I G Q Q F A L H E A T L V L G M M L K H F D F E D H T N Y E L D I K E T L T L K P E G F V V K A K S K K I P L G G I P S P S T E Q S A K K V R </p>
Biological Activity	The enzyme activity of this recombinant protein is testing in progress, we cannot offer a guarantee yet.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 µm filtered solution of 20 mM Tris-HCl, 0.5 M NaCl, 6% Trehalose, pH 8.0.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O.
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background

CYP102A1, known as a fatty acid monooxygenase, exhibits versatile enzymatic activities contributing to its role in diverse metabolic processes. This protein catalyzes the hydroxylation of fatty acids at various omega positions, including omega-1, omega-2, and omega-3, with a particular preference for medium and long-chain fatty acids such as lauric, myristic, and palmitic acids. Additionally, CYP102A1 can metabolize some primary fatty acid metabolites into secondary and tertiary products. Notably, it displays a marginal activity towards short-chain fatty acids. Its ability to hydroxylate highly branched fatty acids is crucial for regulating membrane fluidity. Beyond its monooxygenase function, CYP102A1 demonstrates a NADPH-dependent reductase activity in the C-terminal domain, facilitating electron transfer to the heme iron of the cytochrome P450 N-terminal domain. An intriguing aspect of its functionality involves the inactivation of quorum sensing signals produced by competing bacteria. CYP102A1 efficiently oxidizes acyl homoserine lactones (AHLs), key molecules in quorum sensing signaling pathways, and their lactonolysis products acyl homoserines (AHs), thus contributing to the modulation of bacterial communication.

Caution: Product has not been fully validated for medical applications. For research use only.

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