

## CYP3A4 Protein, Human (Cell-Free, His)

<b>Cat. No.:</b>	HY-P702259
<b>Synonyms:</b>	sulfoxide-forming; ; Albendazole sulfoxidase; CYP11A3; CYP11A4; Cholesterol 25-hydroxylase; Cytochrome P450 3A3; Cytochrome P450 HLP; Cytochrome P450 NF-25; Cytochrome P450-PCN1; Nifedipine oxidase; Quinine 3-monooxygenase
<b>Species:</b>	Human
<b>Source:</b>	E. coli Cell-free
<b>Accession:</b>	P08684 (A2-A503)
<b>Gene ID:</b>	1576
<b>Molecular Weight:</b>	63.3 kDa

### PROPERTIES

<b>AA Sequence</b>	<pre> A L I P D L A M E T   W L L L A V S L V L   L Y L Y G T H S H G   L F K K L G I P G P T P L P F L G N I L   S Y H K G F C M F D   M E C H K K Y G K V   W G F Y D G Q Q P V L A I T D P D M I K   T V L V K E C Y S V   F T N R R P F G P V   G F M K S A I S I A E D E E W K R L R S   L L S P T F T S G K   L K E M V P I I A Q   Y G D V L V R N L R R E A E T G K P V T   L K D V F G A Y S M   D V I T S T S F G V   N I D S L N N P Q D P F V E N T K K L L   R F D F L D P F F L   S I T V F P F L I P   I L E V L N I C V F P R E V T N F L R K   S V K R M K E S R L   E D T Q K H R V D F   L Q L M I D S Q N S K E T E S H K A L S   D L E L V A Q S I I   F I F A G Y E T T S   S V L S F I M Y E L A T H P D V Q Q K L   Q E E I D A V L P N   K A P P T Y D T V L   Q M E Y L D M V V N E T L R L F P I A M   R L E R V C K K D V   E I N G M F I P K G   V V V M I P S Y A L H R D P K Y W T E P   E K F L P E R F S K   K N K D N I D P Y I   Y T P F G S G P R N C I G M R F A L M N   M K L A L I R V L Q   N F S F K P C K E T   Q I P L K L S L G G L L Q P E K P V V L   K V E S R D G T V S   G A           </pre>
<b>Appearance</b>	Lyophilized powder.
<b>Formulation</b>	Lyophilized from a 0.22 µm filtered solution of Tris/PBS-based buffer, 6% Trehalose, pH 8.0.
<b>Endotoxin Level</b>	<1 EU/µg, determined by LAL method.
<b>Reconstitution</b>	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH <sub>2</sub> O. For long term storage it is recommended to add 5-50% of glycerol (final concentration). Our default final concentration of glycerol is 50%. Customers could use it as reference.
<b>Storage &amp; Stability</b>	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.
<b>Shipping</b>	Room temperature in continental US; may vary elsewhere.

## DESCRIPTION

### Background

The CYP3A4 protein, a cytochrome P450 monooxygenase, is intricately involved in the metabolism of a diverse array of substrates, including sterols, steroid hormones, retinoids, and fatty acids. Mechanistically, it utilizes molecular oxygen to insert one oxygen atom into a substrate and reduces the second into a water molecule, with two electrons supplied by NADPH via cytochrome P450 reductase. CYP3A4 catalyzes the hydroxylation of carbon-hydrogen bonds and exhibits high catalytic activity in the formation of hydroxysteroids from estrone and 17beta-estradiol. Notably, it plays a crucial role in androgen metabolism, contributing to the oxidative deactivation of testosterone and the formation of less biologically active hydroxytestosterones. Furthermore, CYP3A4 is instrumental in the metabolism of cholesterol, contributing to the formation of hydroxycholesterols and likely participating in cholesterol degradation and bile acid biosynthesis. The protein also catalyzes bisallylic hydroxylation of polyunsaturated fatty acids, epoxidation of double bonds in polyunsaturated fatty acids, and the metabolism of endocannabinoid arachidonylethanolamide. Additionally, CYP3A4 plays a role in retinoid metabolism, displaying high catalytic activity in the oxidation of all-trans-retinol to all-trans-retinal, a key step in the biosynthesis of all-trans-retinoic acid. Moreover, it is responsible for the oxidative metabolism of various xenobiotics, serving as a major contributor to drug metabolism and playing a role in vitamin D catabolism and calcium homeostasis by catalyzing the inactivation of the active hormone calcitriol.

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

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