

Product Information

Kynurenine 3-Monooxygenase from *Pseudomonas fluorescens* (strain 17400) recombinant, expressed in BL21 DE3 cells

Catalog Number **SAE0004**
Storage Temperature -70°C

EC 1.14.13.9
Synonyms: KMO, kynurenine 3-hydroxylase

Product Description

Kynurenine 3-monooxygenase (KMO) is a flavoprotein aromatic hydroxylase (FAH) that catalyzes the hydroxylation of L-kynurenine (L-Kyn) to produce 3-hydroxykynurenine (3-OH-Kyn). This activity is central to tryptophan metabolism and also to the production of nicotinamide adenine dinucleotide (NAD) in higher organisms.¹ KMO contains flavin adenine dinucleotide (FAD) as a tightly (non-covalently) bound co-factor at a 1:1 ratio of co-factor to protein.²

KMO has been proposed as a possible therapeutic target for mitigation of neuronal damage during ischemic events such as seizures and stroke.³ KMO has also been likewise suggested as a potential therapeutic target for Huntington's disease and post-traumatic sepsis.³ The toxic effects of KMO have been proposed to occur because 3-OH-Kyn can act to generate reactive oxygen species (ROS) and contribute to protein crosslinking and inhibition of the mitochondrial respiratory chain.²

KMO inhibition has been posited to shift kynurenine pathway metabolism towards the formation of kynurenic acid, and away from the production of 3-OH-Kyn and quinolinic acid (QA). 3-OH-Kyn and QA have been postulated as biochemical triggers for Huntington's Disease neuropathology.⁴

The redox kinetics of recombinant KMO from *Pseudomonas fluorescens* have been investigated.³

NCBI Reference Sequence: WP_029293793.1

Molecular mass: 50,712 Da (calculated)

Extinction coefficient: $\epsilon_{450} = 12,300 \text{ M}^{-1} \text{ cm}^{-1}$
(based on the FAD co-factor)

The product is supplied in solution at 10–50 mg/mL (250 μM – 1.25 mM, 0.01–0.05%) in 20 mM HEPES, pH 7.0, and 2 mM β -mercaptoethanol (BME).

Unit definition: 1 $\mu\text{mole/minute}$ at pH 7.0 at 25°C

KMO Assay and Steady-State Observations: Steady-state observations use either a dioxygen electrode or a spectrophotometer with measurement at 340 nm ($\epsilon_{340} = 6700 \text{ M}^{-1} \text{ cm}^{-1}$). Assays include 1 μM KMO, 500 μM L-Kyn and NADPH in 20 mM HEPES, 2 mM DTT, pH 7.5. Rates are determined from data obtained in the initial 10 seconds.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses.

Storage/Stability

The recommended long-term storage temperature for the product is -70°C .

References

1. Crozier, K.R., and Moran, G.R., *Protein Expr. Purif.*, **51(2)**, 324-333 (2007).
2. Wilson, K. et al., *Protein Expr. Purif.*, **95(100)**, 96-103 (2014).
3. Crozier-Reabe, K.R. et al., *Biochemistry*, **47(47)**, 12420-12433 (2008).
4. Thevandavakkam, M.A. et al., *CNS Neurol. Disord. Drug Targets*, **9(6)**, 791-800 (2010).

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