# KMO – Kynurenine 3 – monooxygenase

## Product specification

**Acronym:** KMO
**Class:** Enzyme
**Origin:** Human
**Molecular weight:** 55,8 kDa
**Application:** Screening & display technologies, Antibody development, Structural Biology.

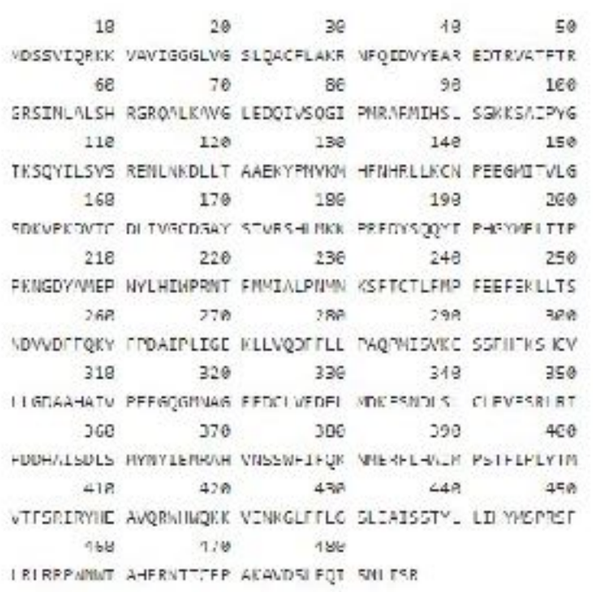
**Purity:** >70%
**Activity:** Validated by spectrophotometric assay
**Length:** Full Length
**TMD:** 1
**Biological function:** Synthesis of quinolinic acid

## Product description

KMO is required for synthesis of quinolinic acid, a neurotoxic NMDA receptor antagonist and potential endogenous inhibitor of NMDA receptor signaling in axonal targeting, synaptogenesis and apoptosis during brain development. Quinolinic acid may also affect NMDA receptor signaling in pancreatic beta cells, osteoblasts, myocardial cells, and the gastrointestinal tract.
KMO is a flavin adenine dinucleotide (FAD)-containing outer mitochondrial membrane enzyme of the Kyn pathway (KP). This pathway is a drug target of several pathological states, especially immunological diseases (e.g., cancer and chronic infection) and neurodegenerative and/or neuroinflammatory diseases (including huntington disease, Parkinson disease, and alzheimer's disease ). It is initiated through the oxidative cleavage of l-tryptophan by indoleamine 2,3-dioxygenases, or tryptophan 2,3-dioxygenase to yield *N*-formyl-l-kynurenine (NFK). Subsequent hydrolysis by formamidase yields l-kynurenine (l-Kyn).

**Protein Source:** HuKMO wild type protein (Human KMO isoform 1)

*Fig.1: AA sequence of hKMO protein*




**Affinity Tag:** No affinity Tag on the protein and N-terminal His Tag.

**Production conditions:** huKMO is expressed in a cell-free expression system, in the presence of lipid vesicles.100 µg can be produced and qualified in about 1 week.

## Quality analysis

**Purity:** Typically > 70% as determined by SDS-Page and Coomassie Blue staining.

**Purification procedure:** As standard, huKMO proteoliposomes are purified on a sucrose gradient. Futher purification can be performed if required.

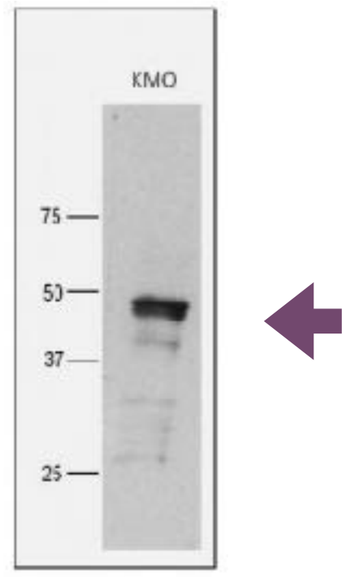



*Fig.2: Proteoliposome hKMO after purification (Western Blot identification)*

## Assessment of functionality

Recombinant proteoliposomes containing huKMO have been shown to be active into liposomes. Its binding properties were validated using spectrophotometric experiments.
Cell-free expression systems provide a real alternative for membrane protein expression, enabling the study of structure and function of membrane proteins.

**Methods:**
The Human KMO protein was expressed in Synthelis' cell-free system in the presence of liposomes to obtain proteoliposomes in one step reaction.
The reaction to hydrolysis L-kyn in L-3OH-Kyn is perform with NADPH: L-Kyn + NADPH = L-3OH-Kyn + NAPD+H2O.
Spectrophotometric assay was used to characterize the NADPH disappearance, at 340nm.

**Results :**
The results show that recombinant KMO embedded in the lipid bilayer of the liposomes is correctly folded and oriented to enable the hydrolisis of L-kyn.

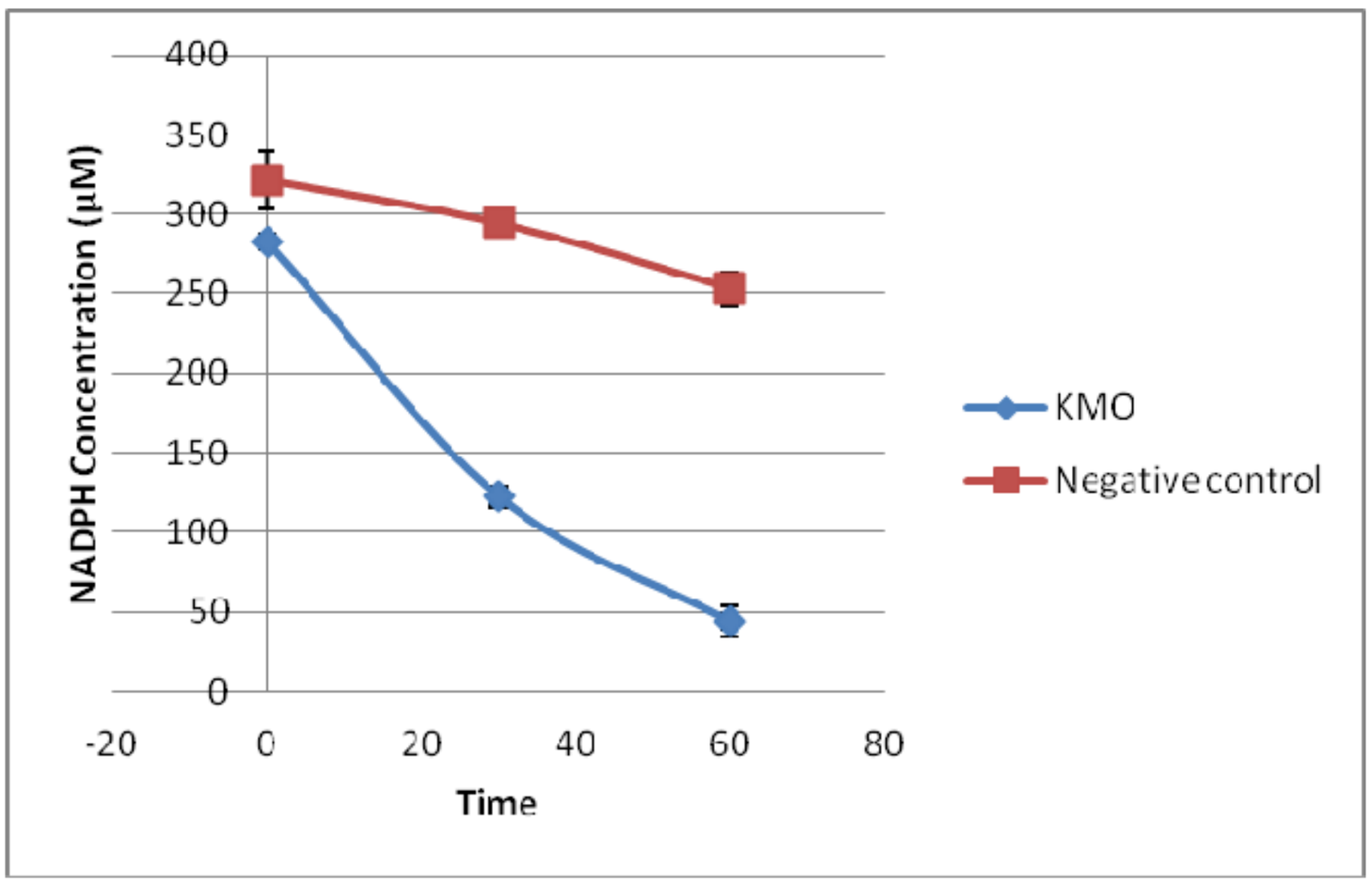



*Fig.3: Kinectics of NADPH disappearance.*

## Formulation

**Buffer:** Available in Tris 50mM, pH 7.5. Other buffers or customized formulation can be provided upon request.

**Customized Hydrophobic matrix:** Customized formulation with specific lipids like PEGylated or biotinylaed lipids can be used upon request, as well as targeting molecules.

**Storage/Stability:** Store at +4°C for up to one week or several months at -80°C. Aliquot for storage. Do not freeze-thaw after aliquoting.

**Use restrictions:** For life science research use only.

**Available sizes:** 10µg, 20µg ,100 µg , 200 µg, 500 µg,bulk



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