FAP Protein, Human (HEK293, His)

Cat. No.:	HY-P72659
Synonyms:	Prolyl endopeptidase FAP; FAP; FAPA; DPPIV; SIMP; Fapalpha
Species:	Human
Source:	HEK293
Accession:	Q12884-1 (L26-D760)
Gene ID:	2191
Molecular Weight:	Approximately 85-100 kDa due to the glycosylation.

PROPERTIES

AA Sequence	L R P S R V H N S E E N T M R A L T L K D I L N G T F S Y K T F F P N W I S G Q E Y L H Q S A D N N I V L Y N I E T G Q S Y T I L S N R T M K S V N A S N Y G L S P D R Q F V Y L E S D Y S K L W R Y S Y T A T Y Y I Y D L S N G E F V R G N E L P R P I Q Y L C W S P V G S K L A Y V Y Q N N I Y L K Q R P G D P P F Q I T F N G R E N K I F N G I P D W V Y E E E M L A T K Y A L W W S P N G K F L A Y A E F N D T D I P V I A Y S Y Y G D E Q Y P R T I N I P Y P K A G A K N P V V R I F I I D T T Y P A Y V G P Q E V P V P A M I A S S D Y Y F S W L T W V T D E R V C L Q W L K R V Q N V S V L S I C D F R E D W Q T W D C P K T Q E H I E E S R T G W A G G F F V S T P V F S Y D A I S Y Y K I F S D K D G Y K H I H Y I K D T V E N A I Q I T S G K W E A I N I F R V T Q D S L F Y S S N E F E E Y P G R R N I Y R I S I G S Y P P S K K C V T C H L R K E R C Q Y Y T A S F S D Y A K Y Y A L V C Y G P G I P I S T L H D G R T D Q E I K I L E E N K E L E N A L K N I Q L P K E E I K K L E V D E I T L W Y K M I L P P Q F D R S K K Y P L L I Q V Y G G P C S Q S V R S V F A V N W I S Y L A S K E G M V I A L V D G R G T A F Q G D K L L Y A V Y R K L G V Y E V E D Q I T A V R K F I E M G F I D E K R I A I W G W S Y G G Y V S S L A L A S G T G L F K C G I A V A P V S S W E Y Y A S V Y T E R F M G L P T K D D N L E H Y K N S T V M A R A E Y F R N V D Y L L I H G T A D D N V H F Q N S A Q I A K A L V N A Q V D F Q A M W Y S D Q N H G L S G L S T N H L Y T H M T H F L K Q C F S L S D
Biological Activity	Measured by its ability to convert the substrate benzyloxycarbonyl-Gly-Pro-7-amido-4-methylcoumarin (Z-GP-AMC) to Z-Gly-Pro and 7-amino-4-methylcoumarin (AMC). The specific activity is ≥3884 pmol/min/μg.
Appearance	Solution
Formulation	Supplied as a 0.2 μm filtered solution of 20 mM Tris-HCl, 150 mM NaCl, 20% Glycerol, pH 8.0.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	N/A

Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice

DESCRIPTION

Background

FAP protein is a type II transmembrane serine protease and a factor that regulates mitosis. It is essential for cell proliferation and is also involved in tissue remodeling. FAP is associated with various human diseases, including fibrosis, arthritis, atherosclerosis, autoimmune diseases, metabolic disorders, and cancer. In most cases, the elevation of FAP expression is correlated with disease progression and increased severity[1].

(1) Fibrosis: Elevated FAP levels play a crucial role in the fibrosis process of organs such as the liver, lungs, and colon. In idiopathic pulmonary fibrosis (Idiopathic Pulmonary Fibrosis, IPF), FAP has dual functions, as it can promote fibrosis but may also inhibit fibrosis by facilitating the degradation of excessively deposited extracellular matrix. FAP is also associated with fibrosis in keloids and Crohn's disease[2].

(2) Arthritis: FAP expression is increased in osteoarthritis (Osteoarthritis, OA) and rheumatoid arthritis (Rheumatoid Arthritis, RA), where it is involved in cartilage degradation and synovial inflammation[3].

(3) Cardiovascular Diseases: Upregulated FAP expression is associated with atherosclerosis (Atherosclerosis) and myocardial infarction (Myocardial Infarction, MI) and may increase the risk of plaque rupture[4].

(4) Metabolic Disorders: FAP influences metabolism by cleaving fibroblast growth factor 21 (FGF21). Inhibition of FAP can elevate FGF21 levels, improving obesity and metabolic health[5].

(5) Tumors: FAP is typically highly expressed in the stroma of cancers, including multiple myeloma, breast cancer, lung cancer, and gastrointestinal cancer, and can serve as a marker for cancer-associated fibroblasts (CAFs). FAP affects tumor growth through various mechanisms, including promoting proliferation, invasion, angiogenesis, epithelial-mesenchymal transition, stem cell promotion, immune suppression, and drug resistance[6].

FAP can lead to increased cell proliferation and migration by activating the PI3K/AKT and SHH/GLI signaling pathways. Overexpression of FAP reduces the phosphorylation of focal adhesion kinase (FAK), which plays a role in signal transduction at integrin aggregation points. The reduction in FAK phosphorylation may be related to decreased cell adhesion and motility. FAP can also activate the uPAR-mediated FAK-Src-STAT3 pathway, promoting the expression of the immunosuppressive cytokine CCL2 and enhancing immune suppression[7][8].

REFERENCES

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