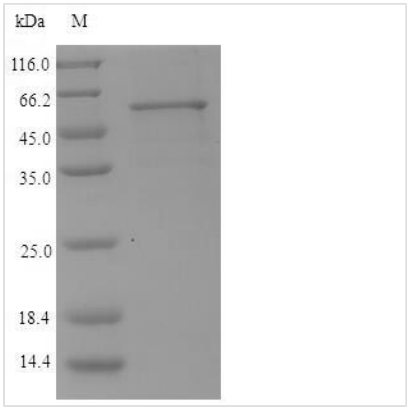
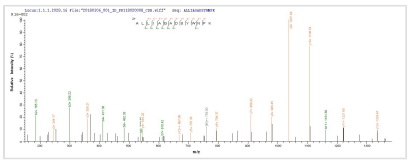
Recombinant Porphyromonas gingivalis Lys-gingipain (kgp), partial

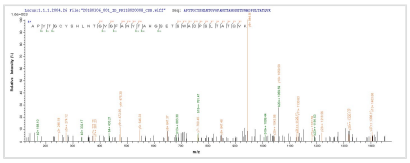
Product Code	CSB-EP464342EXZ
Relevance	Cysteine proteinase with a strong preference for substrates with Lys in the P1 position. Hydrolyzes bovine hemoglobin, bovine serum albumin, casein, human placental type I collagen and human IgA and IgG. Disrupts the functions of polymorphonuclear leukocytes. May act as a virulence factor in the development of peridontal disease. Involved in the coaggregation of P.gingivalis with other oral bacteria.
Abbreviation	Recombinant Porphyromonas gingivalis kgp protein, partial
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	B2RLK2
Alias	Lysine-specific cysteine proteinase Kgp
Product Type	Recombinant Protein
Immunogen Species	Porphyromonas gingivalis (strain ATCC 33277 / DSM 20709 / JCM 12257)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	DVYTDHGDLYNTPVRMLVVAGAKFKEALKPWLTWKAQKGFYLDVHYTDEAEV GTTNASIKAFIHKKYNDGLAASAAPVFLALVGDTDVISGEKGKKTKKVTDLYYS AVDGDYFPEMYTFRMSASSPEELTNIIDKVLMYEKATMPDKSYLEKALLIAGAD SYWNPKIGQQTIKYAVQYYYNQDHGYTDVYSYPKAPYTGCYSHLNTGVGFAN YTAHGSETSWADPSLTATQVKALTNKDKYFLAIGNCCVTAQFDYPQPCFGEV MTRVKEKGAYAYIGSSPNSYWGEDYYWSVGANAVFGVQPTFEGTSMGSYDA TFLEDSYNTVNSIMWAGNLAATHAGNIGNITHIGAHYYWEAYHVLGDGSVM
Research Area	Others
Source	E.coli
Target Names	kgp
Expression Region	229-594aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-SUMO-tagged
Mol. Weight	56.6kDa
Protein Length	Partial
Image	



(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.



Based on the SEQUEST from database of E.coli host and target protein, the LC-MS/MS Analysis result of CSB-EP464342EXZ could indicate that this peptide derived from E.coli-expressed Porphyromonas gingivalis (strain ATCC 33277 / DSM 20709 / JCM 12257) kgp.



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Description

Lys-gingipain (Kgp) is a specific cysteine proteinase produced by Porphyromonas gingivalis, a bacterium associated with periodontal disease. Kgp is part of a group of proteases known as gingipains, which also include Arg-gingipains (Rgps). These gingipains play a crucial role in the virulence of P. gingivalis by aiding in the degradation of host tissues and evading the host immune response [1][2][3][4]. Kgp, along with Rgps, is involved in the pathogenesis of periodontal disease by hydrolyzing specific peptide bonds, with Kgp being specific for Lys-Xaa peptide bonds [4]. The secretion of Kgp is related to the cellular form and is essential for the bacterium's ability to interact with host cells and matrix proteins [5].

Studies have shown that P. gingivalis secretes significant amounts of Kgp on the cell surface and in the extracellular environment, highlighting the importance of this protease in the bacterium's pathogenicity [6]. Additionally, the activity of Kgp has been linked to hemoglobinase activity, indicating its role in nutrient acquisition and potentially in the modulation of the host environment to favor bacterial survival [7]. The presence and correct chromosomal location of the kgp gene, responsible for encoding Kgp, have been confirmed in P. gingivalis strains exhibiting Lys-gingipain activity [7].

References:

[1] J. Potempa, R. Pike, & J. Travis, "The multiple forms of trypsin-like activity present in various strains of porphyromonas gingivalis are due to the presence of either arg-gingipain or lys-gingipain", Infection and Immunity, vol. 63, no. 4, p. 1176-1182, 1995. https://doi.org/10.1128/iai.63.4.1176-1182.1995

[2] R. Takii, T. Kadowaki, A. Baba, T. Tsukuba, & K. Yamamoto, "A functional virulence complex composed of gingipains, adhesins, and lipopolysaccharide shows high affinity to host cells and matrix proteins and escapes recognition by host immune systems", Infection and Immunity, vol. 73, no. 2, p. 883-893, 2005. https://doi.org/10.1128/iai.73.2.883-893.2005
[3] E. Vanterpool, F. Roy, L. Sandberg, & H. Fletcher, "Altered gingipain maturation in vima- and vime-defective isogenic mutants of porphyromonas gingivalis", Infection and Immunity, vol. 73, no. 3, p. 1357-1366, 2005. https://doi.org/10.1128/iai.73.3.1357-1366.2005
[4] T. Imamura, "The role of gingipains in the pathogenesis of periodontal disease", Journal of Periodontology, vol. 74, no. 1, p. 111-118, 2003. https://doi.org/10.1902/jop.2003.74.1.111
[5] L. Wang, "Effects of orthodontic treatment on porphyromonas gingivalis, gingipains and gingival inflammation", European Journal of Inflammation, vol. 21, 2023. https://doi.org/10.1177/1721727x231220237
[6] K. Satô, E. Sakai, P. Veith, M. Shoji, Y. Kikuchi, H. Yukitakeet al., "Identification of a new membrane-associated protein that influences transport/maturation of gingipains and adhesins of porphyromonas gingivalis", Journal of Biological Chemistry, vol. 280, no. 10, p. 8668-8677, 2005. https://doi.org/10.1074/jbc.m413544200
[7] J. Lewis, J. Dawson, J. Hannis, D. Muddiman, & F. Macrina, "Hemoglobinase activity of the lysine gingipain protease (kgp) of porphyromonas gingivalis w83", Journal of Bacteriology, vol. 181, no. 16, p. 4905-4913, 1999. https://doi.org/10.1128/jb.181.16.4905-4913.1999

Reconstitution	We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL.We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.