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Viral Protein U control peptide

Alternate names: U ORF protein, VPU

Catalog No.: AP10372CP-N

Quantity: 0.1 mg

Background: Retroviruses have several characteristic structural and catalytic proteins, one such auxiliary protein is a viral protein U (Vpu) which enhances virion release from human cells and also involved in the degradation of CD4, the cellular surface receptor of HIV-1. The Vpu has no homolog in less pathogenic HIV-2 virus. Vpu is an 81 amino acid class I membrane integral protein that is unique to human and simian immunodeficiency virus isolated from Chimpanzee and few other monkey species. The 16kDa protein Vpu protein consist of an N-terminal hydrophobic membrane anchor of 27 amino acids and a charged C-terminal hydrophilic domain of 54 amino acids that extents to the cytoplasm. The cytoplasmic domain has a conserved dual serine phosphorylation site (S52 GXXand S56 motif) that is phosphorylated by casein kinase II (1).
Vpu is involved in viral replication an degradation of its cellular receptor CD4 and enhancement of viral particle release from macrophages and primary lymphocytes. The degradation of CD4 receptor is achieved by hijacking of protein degradation machinery of the host cells that involves ubiquitin ligases that ensures the selection of proteins to be degraded. Vpu binds to CD4 and simultaneously recruits the βTrCP subunit of the SCFβTrCP ubiquitin ligase complex through its constitutively phosphorylated DS52GXXS56 motif. In this process, Vpu was found to escape degradation, while inhibiting the degradation of βTrCP natural targets such as β-catenin and IκBα (2). Interestingly, the Vpu activity was not observed in simian cells probably due to its ability to counter act host cell restriction factor specific for human cells and may depend on Vpu binding to host channel TASK-1 protein (3). Vpu is degraded in cells arrested in early mitosis by nacodazole, the degradation process require phosphorylation of the serine 61 residue adjacent to the bTrCP-binding motif (3). Vpu has all the characteristics of signal peptide sequences (hydrophobic N-terminal and a hydrophilic C-terminal tail) when cleaved by signal peptidases stays with lipids of the signal peptidase complex, after further processing the N-0terminal region is released into cytosol where it interacts with calmodulin and preprolactin

Format: **State:** Liquid synthetic peptide

Description: Antigenic blocking peptide for AP10372PU-N

Storage: Store (in aliquots) at -20 °C. Avoid repeated freezing and thawing.
Shelf life: one year from despatch.

General Readings:
1. Julie Binette., Mathieu Dube., Johanne Mercier., et. al., Requirement for the selective degradation of CD4 receptor molecule by the human immunodeficiency virus type 1 Vpu protein in endoplasmic reticulum. Retrovirology, 2007. 4. 75.
2. Estrabaud E, Le Rouzic E, Lopez-Vergès S, Morel M, Belaïdouni N, Benarous R, et al. Regulated degradation of the HIV-1 Vpu protein through a betaTrCP-independent pathway

limits the release of viral particles. PLoS Pathog. 2007 Jul 27;3(7):e104. PubMed PMID: 17676996.
3. Hsu K, Seharaseyon J, Dong P, Bour S, Marbán E. Mutual functional destruction of HIV-1 Vpu and host TASK-1 channel. Mol Cell. 2004 Apr 23;14(2):259-67. PubMed PMID: 15099524.