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15-4010: VIP (human, mouse, rat) . AcOH [RLF-100]

Alternative Name : Aviptadil, HSDAVFTDNYTRLRKQMAVKKYLNSILN-NH2, Vasoactive Intestinal Peptide, Vasoactive Intestinal Octacosapeptide.

Description

Molecular Formula: $C_{147}H_{238}N_{44}O_{42}S$. $C_2H_4O_2$

Molecular Weight: 3325.8 . 60.0

Vasoactive intestinal peptide (VIP) is a 28 aa peptide that belongs to secretin-glucagon-CRF superfamily, the ligand of class II G protein-coupled receptors subclass B1. VIP binds to the receptors VPAC1, VPAC2 and with less sensitivity to PAC1, which trigger a G-α-mediated signaling cascade, eventually activating adenyl cyclase leading to increases in cAMP and PKA. The PKA then activates other intracellular signaling pathways like the phosphorylation of CREB and other transcriptional factors. The VIP receptors are widely expressed in brain, liver, lung, pancreas, skeletal muscle, heart, kidney, adipose tissue, testis and stomach and also abundantly in immune cells. Although first identified in the intestinal tract, VIP is now known to be produced throughout the body, but primarily concentrated in the lungs, bound to the alveolar type II cell type, which is critical for the transmission of oxygen to the body.
The widespread distribution of VIP correlates with its involvement in a wide variety of biological activities including vasodilation, bronchodilation, hyperglycaemia, neuroprotection, inflammation, autoimmunity, cancer and hormonal regulation. VIP has multiple physiological and pathological effects on development, growth, and the control of neuronal, epithelial and endocrine cell functions that in turn regulate ion secretion, nutrient absorption, gut motility, glycemic control, carcinogenesis, immune responses and circadian rhythms. VIP is a antiproliferative, anti-inflammatory and immune-regulatory peptide. As anti-inflammatory agent it acts by inhibiting phagocytic activity, free radical production, adherence and migration of macrophages. It reduces the production of inflammatory cytokines (TNF-α, IL-12, IL-6 and IL-1β) and various chemokines and downregulates the expression of inducible nitric oxide synthase.
VIP is expressed in airway epithelial cells, secretory glands, immune and inflammatory cells. It functions as a neuroendocrine hormone and putative neurotransmitter. It stimulates neuronal survival and modulates glycogen metabolism. VIP blocks mitogen-activated proliferation of T cells by preventing interleukin-2 production. It promotes electrolyte secretion and provides protection against oxidant injury. VIP has especially potent anti-inflammatory activity in animal models of respiratory distress, acute lung injury and inflammation. VIP has been used in clinical trials for sarcoidosis, pulmonary fibrosis, asthma/allergy, and pulmonary hypertension.
VIP (RLF-100; Aviptadil) provides rapid respiratory failure reduction in clinically ill patients with COVID-19 and blocks replication of the SARS-CoV-2 virus in human lung cells and monocytes. Therefore it is being investigated in clinical trials for the treatment of Acute Respiratory Distress Syndrome (ARDS) in COVID-19. COVID-19-related death is primarily caused by respiratory failure induced by early viral infection of the alveolar type 2 cells. These cells are known to have angiotensin-converting enzyme 2 (ACE2) receptors at high levels, which serve as the route of entry for the SARS-CoV-2 into the cells. The same type 2 alveolar cells have high concentrations of VIP receptors on their cell surfaces giving rise to the hypothesis that VIP could specifically protect these cells from injury. Interestingly alveolar type 2 cells produce a surfactant that coats the lung and is essential for oxygen exchange and RLF-100 specifically targets these vulnerable alveolar type 2 cells.

Product Info

Amount :	1 mg / 5 mg
Purification :	â‰¥98% (HPLC)
Content :	VIP is supplied as a white to off-white lyophilized powder.
Storage condition :	Store at +4°C for short term storage. Stable for at least 2 years after receipt when stored at -20°C.
Amino Acid :	H-His-Ser-Asp-Ala-Val-Phe-Thr-Asp-Asn-Tyr-Thr-Arg-Leu-Arg-Lys-Gln-Met-Ala-Val-Lys-Lys-Tyr-Leu-Asn-Ser-Ile-Leu-Asn-NH2

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Application Note

A stock solution may be made by soluble in water or aqueous solution (1% AcOH) (1mg/ml).

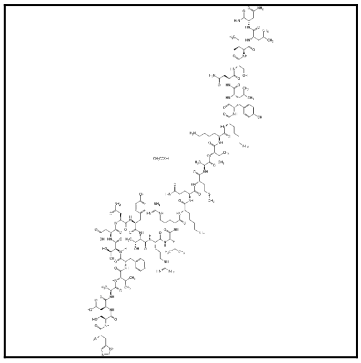

Figure-1: Structure of VIP.