Lipopeptide Part 2

Physical and Storage Properties of Lipopeptide

Lipopeptide is typically presented as a sterile, pale yellow or light brown lyophilized cake. The peptide's only inactive ingredient is sodium hydroxinde, and it is there in minimal quantities for the purposes of pH adjustment. The solution itself will range in color from light brown to pale yellow when it is ready for the animal test subject.

Lipopeptide should be shipped at room temperature, but should be stored at 4 degrees Celsius upon arrival to a strictly controlled environment such as a laboratory or a medical research facility. The solution should in turn be aliquoted and stored either at or below -20 degrees Celsius.

Click the image above to view Lipopeptide in our store

Lipopeptide and Pepducin

Scientific study based on animal test subjects has also focused their study on lipopeptides and their role as pepducins. In essence, pepducins are novel cell-penetrating peptides that function as intracellular modulators of signal transference from receptors to G proteins.

These particular forms of lipopeptides function due to their relationship with various lapidated fragments of G protein-coupled cellular loops that are used to modulate G-protein-coupled receptors, which are alternatively known as the following:

- Seven-transmembrane domain receptors
- 7TM receptors
- Heptahelical receptors
- Serpentine receptor
- G protein-linked receptors (GPLR)

These receptors are representative of a large protein family of receptors which work by sensing molecules outside the cell and activating inside signal transduction pathways, which in turn leads to cellular responses.

It has been shown that a Pepducin molecule consists of a short peptide that is culled from a GPCR intracellular loop, which is llinked to a hydrophobic moiety; that is, a functional group of atoms or bonds within a molecular structure that is repelled by water. The structure that is formed allows these specific lipopeptides to tether within the cell membrane lipid bilyaer. Once this occurs, it can target the CPCR/G protein interface through a singular, intracellular alloseteric mechanism. In other words, it can hone in and engage the protein through a process where the protein is regulated through the binding of an effector molecule at a place apart from the protein's active site.

Lipopeptide Dynamics

Based on scientific study on animal test subjects, it appears that the antimicrobial activity of lipopeptide is linked to the AUC/MIC ration (that is, area under the concentration-time curve/minimum inhibitory concentration) ratio for specific

pathogens.

It has also been determined that Lipopeptide is reversibly bound to specific plasma proteins in a concentration-independent fashion. Chief amongst these is serum albumin, which is the substance that is key to regulating the blood's osmotic pressure. Studies on animal test subjects have also determined that mean serum protein binding in subjects with cretinine clearance, or CLCR, at a rate greater than or equal to 30 mL/min was also comparable to what was observed in healthy subjects with regulated renal function.

Lipopeptide, Muscles, and Nerves

Other scientific study that has been based on animal test subjects have determined that the presence ofLipopeptide does have certain skeletal muscle effects, although it should be noted that there was no effects in related to either smooth muscle or cardiac muscle. The skeletal muscle effects that were observed were marked by microscopic degenerative and regenerative changes and variable elevations in creatine phosphokinase, also known as CPK. That said, no fibrosis or rhabdomyolysis were observed in repeat-dose observations in rats and in dogs. Furthermore, all muscle effects that were recorded were completely reversed within 30 days of test cessation.

It was also determined that effects on peripheral nerves accompanied by significant losses of pattelar reflex, gag reflex, and the perception of pain were observed in animal test subject-induced Lipopeptide doses higher than those that were linked to skeletal myopathy. It was also demonstrated that while some of these conditions were clinically improved within two weeks after dosing cessation at a lower dosage, it was determined that higher dosages resulted in a minimal residual histological changes when measured in a 6 month time interval.

And tissue distribution studies in rats demonstrated that Lipopeptide is held within the kidney. However, it was also shown that the peptide appears to penetrate the blood-brain barrier on a minimal basis following both single and multiple doses.

Click here to read Lipopeptide Part 1