Effect of Melittin and Apamin Co-therapy on the Inhibition of Coronavirus Cell Mediated Entry- A Potential management of Covid-19.

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Abstract

The Coronaviruses affecting humans are usually enveloped positive-stranded RNA viruses that replicate in the cytoplasm. To deliver their nucleocapsid into the host cell, they rely on the fusion of their envelope with the host cell membrane. The spike glycoprotein (S) mediates virus entry and is a primary determinant of cell tropism and pathogenesis. The Glycoprotein Spikes is responsible for binding to the receptor on the host cell as well as mediating the fusion of host and viral membranes. This process which is an adaptation for survival which it possesses such that it can conform to whatever form or type and so can defy all management methods. Melittin on the other Hand is a small peptide with no disulfide bridge and can open thermal nociceptor TRPV1 channels via cyclooxygenase metabolites resulting in depolarization of nociceptor cells. The pore forming effects in cells causes the release of pro-inflammatory cytokines which inturn refuses glycoprotein bindings to the receptor of host cells. Melittin inhibits protein kinase C, Ca^{2+}/calmodulin-dependent protein kinase II, myosin light chain kinase, and Na^{+}/K^{+}-ATPase (synaptosomal membrane). it is known to blocks transport pumps such as the Na^{+}-K^{+}-ATPase and the H^{+}-K^{+}-ATPase. Melittin increases the permeability of cell membranes to only ions, particularly Na^{+} and indirectly Ca^{2+}, because of the Na^{+}-Ca^{2+}-exchange. This effect results in morphological and functional changes, particularly in excitable tissues. Apamin in its case is the only known polypeptide to cross the blood brain barrier which makes it uniquely reach the Central nervous system and can thus reverse in controlled doses difficulty in breathing Associated with Covid-19. Prior research according to Vincent et al established that doses of Apamin are usually found in the Spinal cord particularly region responsible for the Respiratory system. This article seeks to Bring to limelight the potential of Covid-19 management embedded in Melittin and Apamin co therapy.

Keywords: Protein Kinase, Apamin, COVID-19, Coronaviruses, Melittin