Fish-derived antimicrobial peptides (AMPs): promising and novel candidates as potential therapeutic molecules for the preventing and treatment of Covid-19

Akhavan Bahabadi M.[1*]
1-National Research center of Saline Water Aquatics, Iranian Fisheries Science Research Institute, Agricultural Research, Education and Extension Organization (AREEO), Bafq, Yazd, Iran.
*Corresponding author's email: akhavanm@ut.ac.ir

Abstract:
AMPs are an important component of innate immunity displayed a broad-spectrum antimicrobial activity. They generally are cationic and amphipathic, with hydrophobic residues. They have also been shown robust antiviral effects towards both enveloped and non-enveloped viruses such as HIV-1, herpes simplex virus and particularly respiratory viruses, including influenza virus, respiratory syncytial virus. They play a dual role in antiviral defense: (1) direct inactivation of viral particles (2) acting on the host cells (immunomodulatory capabilities). Studies have shown that the same AMP may act on different viruses by different mechanisms, serves to strengthen the performance of AMPs and to elude resistance development. Moreover presence of AMPs in the inflamed lung (airway fluid) in high concentrations and their up-regulate expression as well as the transcription of the genes encoding in the lung following viral infection, generating interest in their potential activities against respiratory viruses. On the other hands, fish with roughly 40,000 species compose the largest and the greatest diversity group between vertebrates as well as experienced the third whole-genome duplication event, thus possess their own unique groups of genes in addition well-known ones in other vertebrates. For instance, some fish species have several genomic copies of AMP which located on different chromosomes indicating existent several AMP loci in fish. Moreover, some AMPs exist in fish such as piscidins, which are not identified in humans. Given that the mentioned above fish-derived AMPs may be promising and novel candidates as potential therapeutic molecules for the preventing and treatment of Covid-19.

Keywords: Covid-19, AMP, treatment, Fish-derived