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Oreoch-1 Inhibits Early Influenza A Infection Across Strains

Inhalt

Introduction Antimicrobial peptides are small components of the innate immune system with broad-spectrum antimicrobial activity and immunomodulatory properties. Oreochromicins, isolated from the gills of Nile tilapia (Oreochromis niloticus), have previously demonstrated antiviral activities in vitro. In this study, we investigated for the first time the antiviral activity of Oreoch-1 against influenza A viruses (IAV), including laboratory-adapted and highly pathogenic H5N1 strains.
Materials and Methods Cytotoxicity was evaluated using the MTT assay and antiviral activity was assessed by plaque reduction assays. The direct interaction between Oreoch-1 and viral particles was investigated, and EC50 and EC90 values were determined for human and highly pathogenic avian strains. Time-of-addition experiments using a pseudotyped VSV expressing influenza hemagglutinin and neuraminidase were performed to confirm the stage of viral inhibition. Early replication analyses and Western blotting further characterized the effect on initial infection events.
Results Oreoch-1 exhibited strong inhibitory activity against all tested influenza A strains. The peptide acted primarily during the early stages of infection by directly interacting with viral particles, preventing efficient viral entry.
Conclusions Oreoch-1 demonstrates broad antiviral activity supporting its potential as a promising antiviral against emerging influenza viruses.

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