RESEARCH ARTICLE

# Potential chimeric peptides to block the SARS-CoV-2 spike receptor-binding domain [version 1; peer review: 2 approved, 1 approved with reservations]

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## Abstract

**Background:** There are no known medicines or vaccines to control the COVID-19 pandemic caused by SARS-CoV-2 (nCoV). Antiviral peptides are superior to conventional drugs and may also be effective against COVID-19. Hence, we investigated the SARS-CoV-2 Spike receptor-binding domain (nCoV-RBD) that interacts with hACE2 for viral attachment and entry.

**Methods:** Three strategies and bioinformatics approaches were employed to design potential nCoV-RBD - hACE2 interaction-blocking peptides that may restrict viral attachment and entry. Firstly, the key residues interacting with nCoV-RBD - hACE2 are identified and hACE2 sequence-based peptides are designed. Second, peptides from five antibacterial peptide databases that block nCoV-RBD are identified; finally, a chimeric peptide design approach is used to design peptides that can bind to key nCoV-RBD residues. The final peptides are selected based on their physiochemical properties, numbers and

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