Tentative Outline Special Thematic Issue for Current Protein & Peptide Science

"INHIBITOR PEPTIDE AS THERAPEUTIC AGENTS FOR INFECTION CONTROL"

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Aims Scope:

Peptides often play a crucial role in infection control, due to their attractive pharmacological profile and intrinsic properties. Thus peptides represent an excellent starting point for the design of novel therapeutics. In current healthcare system a major threat is Biofilms which have a complex mixture of tolerance and resistance mechanisms to antibiotics. Antibiofilm peptides have recently received enormous attention for possible use in a number of therapeutic applications against bacterial infections. Several studies have been identified antibiofilm peptides as the potential next-generation alternative to traditional antimicrobial therapy. Peptides have capability to inhibit bacterial cell-wall formation, breaking down DNA or RNA in the cell plasma, cause of protein defragmentation or degradation intracellularly, thereby inducing autolysin, and inhibiting several enzymetic activities. D-enantiomeric peptides like (DJK-5 and 6) were shown to inhibit stongly the Pseudomonas aeruginosa biofilm development and efficiently eradicate the biofilm of several wild-type and antibiotic-resistant Gram-negative pathogens.The resistance of bioflim against the antimicrobial agents is acquired as a multicellular strategy that relies on exchange of chemical signals between different cells in a process known as quoram sensing. Peptides were invented that inhibits quoram sensing S.aureus and prevent disease development. The heptapeptide is now made in its amide form as a synthetic 7-aa molecule (YSPWTNF-NH2) known as RNA III-inhibiting peptide(RIP). RIP inhibits cell adhesion and bioflim formation by inhibiting gene agr subsequently reduces the pathogenesis of S. aureus. The cell-penetrating peptides (CPPs) has the ability to enter cells those are independent of a membrane receptor, and their self-assembled form on cell membranes into exosome-like aggregates inducing cell lysis.

Efflux pumps play an important role in the antibiotic resistance of pathogens. A limited number of peptide is reported for efflux pump inhibitor. It necessitates a pervasive investigation to develop peptide based new inhibitors. Such as, CmeABC is a resistance-nodulation-cell division (RND)-type multidrug efflux pump conferring resistance to clinically important antibiotics in Campylobacter jejuni CmeA Peptide nucleic acids (PNA) targeting the ribosome binding site(RBS) of CmeA and its up-stream region reduced CmeA expression most efficiently, and CmeB expression was most significantly decreased by PNA binding to the RBS of cmeB and its downstream region. Thus, PNA increased the susceptibility of C.jejuni to drugs.

Furthermore, the antiviral drugs are also started to develop from peptides which lead to the discovery of novel anti-DENV therapeutics for the treatment of Dengue patients. E2-DNA interaction antagonized by synthetic peptides, effectively blocked E2-mediated transcriptional activation of a reporter gene in cell culture, thereby E1-E2-mediated HPV-11 DNA replication in vitro is inhibited. These peptides may prove to be useful tools for characterizing E2 function and for exploring the effectiveness of E2-inhibitor-based treatments for HPV-associated diseases.

Therefore, authors are requested to submit their original research or review article or in silico analysis with any specific target inhibition (as quoram sensing, biofilm, swarming motility, metabolic synthesis, protein synthesis, nucleic acid synthesis, cell wall synthesis, efflux pump, antibiotic-target modifying and antibiotic-modifying enzymes, membrane disruption, etc…) by peptides from natural or synthetic source as new strategies with therapeutic potential to infection control.

Keywords: Inhibitor peptides, Antimicrobial peptides, Efflux pump, Biofilm, Quorum sensing.

Schedule:
Thematic issue submission deadline: December 2020

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