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Plant derived cyclopeptides: Targets for drug discovery

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Medicinal plants are enriched with several active constituents responsible for their biopotency. Among these, peptides have received special attention due to their wide pharmacological profile including antimicrobial, anti-inflammatory, anti-AIDS, anti-malarial, cytotoxic, nematocidal, inhibitory activity against thrombin, trypsin, plasmin, tyrosinase and superoxide generation, calcium channel antagonistic activity and may prove better candidates to overcome the problem of resistance towards conventional drugs. Although linear peptides are associated with diverse bioactivities but cyclopeptides dominate over them due to the fact that inherent flexibility of linear peptides lead to different conformations which can bind to more than one receptor molecules, resulting in undesirable adverse effects. Furthermore, cyclization of peptides reduces the degree of freedom for each constituent within the ring and thus substantially leads to reduced flexibility, increased potency and selectivity of cyclic peptides. These cyclic congeners possess unusual or modified amino acid residues like dehydrohomoalanine (Dhha), (2S,3R)-3-hydroxy-3-methylproline as well as novel acid moieties such as 4-amino-3,5-dihydroxyhexanoic acid (Adha), (2S,3R,5R)-3-amino-2,5-dihydroxy-8-phenyloctanoic acid (Ahoa), 3-amino-4-hydroxy-6-methyl-8-phenylocta-5,7-dienoic acid (AHMP) and exhibit their bioactivities through binding to corresponding enzymes. This characteristic feature can allow bioactive cyclopeptides to act as therapeutic agents in this resistant world. Present report includes complex structures, synthesis by solution phase technique, biopotential of natural cyclopeptides of plant origin.

Biography

Rajiv Dahiya is Doctor of Science in Clinical Pharmacology from International University for complementary Medicine, Colombo and PhD in Pharmacy from Uttar Pradesh Technical University, Lucknow (UP), India. He is presently President of Association of Pharmacy Professionals (APP) and Editor-in-Chief of international level journal, *Bulletin of Pharmaceutical Research* (BPR). He has 13 years of teaching and 8 years of research experience. His research area is synthetic peptide chemistry and till now he has published 50 research papers and 9 review articles in various international and national journals covering a total impact factor of 36.6. He is recipient of 'Innovative Research Award' in June 2012, 'Excellence Award' in Pharmacy in Feb 2014, 'Young Pharmacist Award' & 'Young Scientist Award' in March 2014.

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