

6<sup>th</sup> World Congress on

# Bioavailability & Bioequivalence: BA/BE Studies Summit

August 17-19, 2015 Chicago, USA

## Design, synthesis and studies of delta and Cox-2 receptor specific analgesic anti-inflammatory activity of some linear and cyclic peptides

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Pain is the most common symptom for most diseases and there is an urgent need of more receptor specific, potent and safe analgesics. The present study is based on docking studies of 30 designed molecules both linear and cyclic small peptides. Using Glide software (version: 5.0), on receptor [pdb: 4COX & OPRD\_HUMAN\_AD\_JOM-13] the ADME studies were done using QikProp (version: 3.1) software. The cyclic peptides have shown good % Human oral absorption. The toxicity studies were validated using OSIRIS Property Explorer. 14 designed ligands having best docking scores were synthesized and screened for anti-inflammatory, analgesic activity. Peripheral analgesic activity was significant in acetic acid induced writhing test in mice, for injectable compounds SSLR-9 (72% of inhibition) and SSLR-12 (61% of inhibition) while orally given compounds SSLR-12 showed good analgesic activity (45% of inhibition) compared to standard compound Aspirin (67% of inhibition). Also, injectable compounds SSLR-9 (43% inhibition) & SSLR-12 (35% inhibition) showed significant degree of anti-inflammatory activity compared to standard compound indomethacin (55% inhibition) in carrageenan induced anti-inflammatory study in rats. Thus this study infers that in the near future different combinations of amino acids will be suitable for peripheral analgesic and anti-inflammatory activity. Peptide combinations can also be attached with the non peptide NSAIDs such as indomethacin etc. and can prove to be more receptor specific, potent, and bio-friendly analgesic and anti-inflammatory agents.

### Biography

S Samanta is Professor in the Department of Pharmaceutical Sciences and Technology, Birla Institute of Technology, Jharkhand India. He is having 29 years of teaching and research experience and presently guiding 7 PhD students. He established CADD lab for the department. He is supported by UGC-MRP project for installation of FlexX and Reaction station in Medicinal Chemistry Research Labs. His area of interest includes anti-diabetics, analgesics, anti-inflammatory agents. He has a patent on product and process on peptide based oral anti-diabetic compounds. He has number of International publications and recognition in the field of research and teaching.

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