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How the strength in organic synthesis can facilitate new drug discovery

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Synthesis of structurally complex and biologically active natural products remains as fascinating and challenging as ever. Success in organic synthesis has also given author and his team the confidence to venture into the emerging areas of creating new molecular entities. They are well-endowed today to create in the laboratory diverse arrays of new molecules with tailor-made structures and properties. The challenges are to find ways to quickly assemble complex three dimensional drug-like structures that can be easily manipulated to build up diverse libraries of NCEs and scaled up for drug developmental purposes. In the work on conformationally constrained scaffolds of sugar amino acids (SAA) and related multifunctional building blocks, many *de novo* peptides with interesting secondary structures and useful biological properties are being developed. The SAA based cationic antimicrobial peptides are showing excellent and very selective activities against bacteria, even against MTB, with reduced or no toxicity. Sugar-appended SAA oligomers adopt distinct structures, depending on backbone configuration, that dictate the interactions with their biological targets. SAA based anticancer molecules that target microtubule dynamics, c-MYC and other gene promoters, VIP receptors, HDAC, etc. appear very promising. The details will be presented.

Biography

Tushar Kanti Chakraborty got his PhD from IIT, Kanpur, India in 1984 and after a brief postdoctoral stint at University of Pennsylvania, Philadelphia. He joined CSIR-IICT, Hyderabad, India in 1987. In December 2008, he took over the directorship of CSIR-CDRI, Lucknow. He shifted to his present position in January 2014. He is the recipient of the Shanti Swarup Bhatnagar Prize, the highest prize in science in India. He is also elected Fellows of all the three Science Academies in India - INSA, IAS and NASI. He received many awards, serves as member of many scientific committees, editorial boards of journals, published many papers and guided several students for PhD

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