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Natural products: The goldmine of future therapeutics

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Since time immemorial, besides being catering to the basic needs of humans, nature has served as the primary source of medicines for the treatment of a wide spectrum of diseases. Plants, in particular, for long have played a leading role in the continuous advancement of traditional systems of medicine. In an interesting ethnopharmacological survey in various states of North East India, we have documented the ethnomedicinal uses of several plants belonging to the Zingiberaceae family. One such important but less studied plant have been chosen for the investigation towards the development of therapeutic drug candidate against pathogenic bacterial strains and human fibrosarcoma. Two principal compounds have been isolated and characterized by NMR, FT-IR and HRMS. These compounds were identified for the first time from this plant which showed tremendous bactericidal activities by damaging bacterial cell membrane. On the other hand, these two lead compounds have been also found to mimic the standard apoptotic agent, staurosporine, in human fibrosarcoma HT1080 cells. Both the compounds were found to arrest the cells in S-phase, induce nuclear fragmentation which leads to apoptosis in HT1080 cells. Further, studies revealed that these compounds could be promising candidate as antimetastatic agents in cancer treatment as they showed matrix metalloproteinase (MMP) inhibitory activity. The present studies involved various spectroscopic techniques, advanced Flow cytometry, Field Emission Scanning Electron Microscopy and Fluorescence Microscopy which will be discussed in detail towards unveiling their strategic applications.

Biography

Sudipta Ghosh has completed his PhD from IIT Guwahati, India and currently working as a postdoctoral fellow in the Chemical Biology Group, Department of Chemistry, IISER Bhopal, India. He has previously worked in Hyderabad Central University and Centre for Cellular and Molecular Biology, India towards the understanding of HIV-Mtb co-interactions and microRNA profiling in Human breast cancer respectively under two Center of Excellence project (CoE), funded by Department of Biotechnology, Government of India. He has published many research and review articles in the international peer reviewed journals and serving as reviewer of the reputed journal "*Medicinal Chemistry Research*".

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