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BIOGENIC DIBUTYLTIN (IV) COMPOUNDS DERIVED FROM α-AMINO ACIDS: SYNTHESIS, BIOIMAGING AND INVESTIGATION OF IN-VITRO ANTICANCER ACTIVITY

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Organotin(IV) compounds (1-6) consisting of biogenic coordinating skeleton have been derived from one pot reaction of dibutyltin oxide, α-amino acids (viz. L-serine, L-isoleucine, L-tryptophan, L-alanine, L-valine, L-methionine) and 2-hydroxy-4-methoxybenzophenone. The characterization of compounds by FT-IR, NMR (1H, 13C, 119Sn) spectroscopy, mass spectrometry, elemental analyses and single crystal X-ray diffraction (for 1, 2 and 3) confirmed the formation of LSnBu2 (where L is Schiff base ligand) in pure form. Compounds 1 and 2 were found to be enantiomerically pure contrary to 3, which crystallized in the form of enantiomeric pair. All the compounds exhibited blue-violet emission with a band centred at 470 nm when excited at a wavelength of 365 nm. The fluorescent nature of compounds was explored to investigate their anticancer activity against HeLa cells. The compounds were found excellent for bioimaging and exhibited good anti-cancer activity. The confocal fluorescent microscopy of HeLa cells revealed the uptake of 1-6 inside the HeLa cells with higher proportion in the cytoplasm. Amongst these, compound 1 was found potent anti-cancer agent with IC50 of 8.35 μM.

BIOGRAPHY

Navjot Singh Batth is working as an assistant professor in postgraduate department of chemistry in GHG Khalsa College, Gurusar Sudhar. He has completed his PhD from Panjab University, Chandigarh. His research interests include investigation of numerous applications of organotin compounds and detection of toxic metal ions/ chemical impurities in agricultural resources like soil and ground water. His relatively young research career is on route to get further focused on carrying out quality research oriented towards social benefits. His teaching duties include teaching of spectroscopic techniques, chemistry of natural products and research supervision of postgraduate students.

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