Lipophosphonoxins: new modular molecular structures with significant antibacterial properties.

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Abstract

Novel compounds termed lipophosphonoxins were prepared using a simple and efficient synthetic approach. The general structure of lipophosphonoxins consists of four modules: (i) a nucleoside module, (ii) an iminosugar module, (iii) a hydrophobic module (lipophilic alkyl chain), and (iv) a phosphonate linker module that holds together modules i–iii. Lipophosphonoxins displayed significant antibacterial properties against a panel of Gram-positive species, including multiresistant strains. The minimum inhibitory concentration (MIC) values of the best inhibitors were in the 1–12 μg/mL range, while their cytotoxic concentrations against human cell lines were significantly above this range. The modular nature of this artificial scaffold offers a large number of possibilities for further modifications/exploitation of these compounds.

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