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Synthesis and Antimicrobial Evaluation of new *N*-acyl bis *n*-butyl glycine Derivatives

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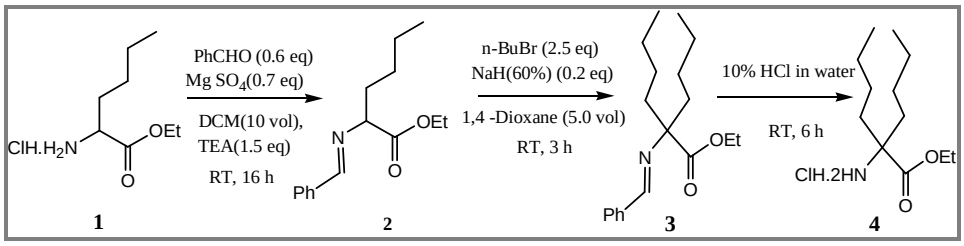
ABSTRACT

Antibacterial and antifungal activity of N-acylbis n-butylglycine and corresponding Ethylester derivatives was examined against 30 strains of Gram-positive and Gram-negative bacteria, and 8 species of yeasts. The level of antimicrobial activity was established using the in vitro agar assay and the standard broth dilution susceptibility test. N-acylbis n-butylglycine derivatives with free acid group have highest lipophilicity (log P), showed the best antibacterial activity, especially against Gram-positive bacteria. Minimum inhibitory concentration of these derivatives were ranging from 0.008 to mg mL^{-1} in the activity against Yersinia enterocolitica O_3, confirmed by a large inhibition zone (30 mm) by the diffusion test. Hydroxamates inhibit growth by chelation of the PDF enzyme metal in both Gram-positive and Gram-negative bacteria and LpxC enzyme in Gram-negative enzyme. These amide derivatives appear to contribute to inhibition by destabilizing m-RNA. Antifungal activity of substances **5–7** *is not very expressed.*

Graphical Abstract



Synthesis of αα-di *n*-butylglycine ethyl ester.

Keywords: Hydroxamic acid, Phthalimide, Antibacterial activity, Lipophilicity.