

Synthesis of 3-methyl-5-nitrobenzyl α,β -diketoester as a derivative of pachydermin, a tetramic acid from *Chamonixia pachydermis*/ Noor Hidayah Pungot, Zurina Shameeri, Ahmad Sazali Hamzah, Mohd Fazli Mohammad and Noorhana Hussain

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Abstrak

Pachydermin, an oxylated tetramic acid with 3-chloro-4-hydroxyphenyl substituent, was isolated from *Chamonixia pachydermis* plant, a basidiomycete of New Zealand. Its degradation product exhibits antibacterial activity against *Bacillus subtilis*, and the derivatives of pachydermin are anticipated to have similar potentials. In this work, a novel approach to synthesize 3-methyl-5-nitrobenzyl α,β -diketoester was developed as a derivative of the natural product pachydermin. The synthetic route began with the synthesis of N-benzylated α,β -diketoester as the key structural moiety, from glycine methyl ester as the starting material. subsequently, oxalyl subunit was inserted, as well as other acyl/alkyl subunits at C-3 position of the α,β -diketoester ring via acylation/alkylation reactions leading to the required intermediates towards pachydermin and its derivatives. alkene functionalities at C-5 position could then be introduced using different alkyl or aryl aldehydes, with the aid of different bases which included diisopropylamine, NaH, Et₃N, K₂CO₃ as well as ionic liquids. insertions of methyl and 4-nitrobenzylidene functionalities at C3- and C5-positions, respectively, were highlighted for the synthesis of the target derivative. selective decarboxylation, ester hydrolysis and N-benzyl deprotection should lead to the required target compound and derivatives. all the synthesized compounds were confirmed by the mass spectroscopy (MS) and nuclear magnetic resonance (NMR) spectroscopy.