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Synthesis of highly functionalized spirocyclic butenolides via ring contraction of fused 2H-pyran-2-ones

Amr Elagamy
University of Delhi, India

Butenolides are a class of lactones, considered as oxidized derivatives of furan with structure made of four carbon heterocyclic ring called furan-2(5H)-ones. A broad range of natural products and biologically active compounds contain butenolides structural as subunits. These compounds exhibit various biological activities such as anti-inflammatory, anticancer, antimicrobial, antifungal, and anti-viral HIV-1. A new method for synthesis of highly functionalized spirocyclic butenolides was achieved through ring opening and relactonization at C5 of fused 2H-pyran-2-ones using nitroalkane as a carbanion source. Nitroethane provides (E)-and (Z)-isomer of spirocyclic butenolides in a ratio of almost 2:1 with relatively better yields than in case of nitromethane which provides only one isomer. Moreover, spirocyclic butenolides obtained from nitroethane undergoes decarboxylative rearrangement in presence of sodium ethoxide to give only one isomer of triene and might be used as a valuable intermediate for synthesis of various triene compounds.

Biography

Amr Elagamy has completed his Bachelor of Science in Chemistry at the Faculty of Science, Tanta University, Egypt, and Master degree in Organic Chemistry at Kirori Mal College, University of Delhi, New Delhi, India. He was awarded DBT-TWAS Postgraduate Fellowship in 2015 to complete his PhD in Organic Chemistry at the University of Delhi, New Delhi – India.

amrelagamy1@gmail.com

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