

Comparison of biological activities between synthesized ester derivatives and its parent compound Solanesol

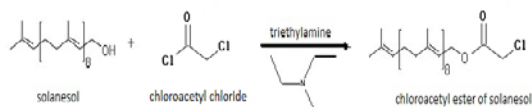
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The new method was prepared for the extraction of pure solanesol by a safe, economic, ecofriendly and industrial viable process. Similarly six semi synthetic derivatives of solanesol were prepared with acceptable degree of purity, and their structures were elucidated with the help of spectral data. Biological studies of semi-synthetic compounds showed improved antioxidant and antimicrobial activity than solanesol.

Experimental: Powdered tobacco leaves were treated with hexane and the residue obtained was treated with hot methanol (50-55°C) to obtain crude Solanesol. To this 10% of methanolic KOH was added and heated at 55-60°C for 4 hours. The solid obtained was collected; toluene was added and then distilled under vacuum. Then the solution was filtered using silica bed to obtain 90% pure-crude Solanesol.

Procedure for the synthesis of ester derivatives: To a stirred solution of Solanesol 1 (1.0 g, 1.5mmole) and Benzene (30 mL) was added Chloroacetyl chloride (0.12 mL, 1.0 eq.)(SC-I)/ Bromoacetyl chloride (0.12 mL, 1.0 eq.)(SB-II) / Iodoacetyl chloride (0.12 mL, 1.0 eq.)(SI-III) P-Nitro benzoyl chloride (1 mole)(SN-IV),3-nitro p-tolyl chloride(SNT-V),P-tolulyl chloride(ST-VI) followed by Triethylamine (1.0 eq) at 5°C and stirred for 4 hrs. Benzene was removed in vacuo and the residue was extracted with Methylene chloride (4 × 25 mL). Combined organic layer was dried over anhydrous Sodium sulphate and concentrated in vacuo to give a thick mass which was purified by flash column chromatography using ethyl acetate: hexane (2:98 v/v) as eluent.



These semi synthetic derivatives are confirmed by IR (Spectro 2060+, Analytical technologies limited) and NMR. The purity of Solanesol was increased about 90% than earlier method. Its semi synthetic derivatives are confirmed by IR and NMR. Antioxidant activity and antimicrobial activity of the semi synthetic compounds showed greater improvement than parent. This is more economical and having commercial value because these potentially useful semi synthetic derivatives are obtained from tobacco waste.