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The preparation of glucose stearic acid esters by lipase-catalyzed reaction in non-aqueous media

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The preparation conditions and efficiency of glucose stearic acid esters (GSAE) by lipase-catalyzed reaction in non-aqueous media were studied in this work. The available lipase of catalytic synthesis GSAE in non-aqueous media was screened from 7 commercial lipases, and the effects of various lipase amount, various organic solvent and amount, molar ratio of substrates, water amount, molecular sieve 3A amount, Agitation speed, reaction temperature, reaction time on GSAE yield were experiment, respectively. The results showed that acetone was appropriate solvent, the immobilized lipase Novozym 435 was the best catalyst for esterification reactions in acetone, and excessive water in the reaction system obviously decreased Novozyme 435 activity and GSAE yield, thus it was very necessary to add defined amount moisture absorber to remove the water of substrates, solvent and reaction process. The optimized esterification reaction conditions with 0.08 g Novozyme 435, 0.8 g 3A molecular sieve, the mole ratio of stearic acid and glucose = 3:1, 10 ml acetone, 150r/min shaking, 45°C reaction temperature, 5 h reaction time were good for making the produce GSAE in non-aqueous media. In the optimized condition, the maximum reaction rate V_m was 0.749 $\mu\text{mol}/\text{min}\cdot\text{g}$, K_m was 0.0203 mmol/L and the GSAE yield rate was up to 64.11%.

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Studies on flavonoids and their antioxidant activities of *Tamarix gallica* L.

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The genus *Tamarix* L. belongs to the Tamaricaceae family. The *Tamarix* found to be rich in polyphenolic compounds such as flavonoids, phenolic acids, tannins and coumarins. Several researches proved antioxidant and antimicrobial activities of some *Tamarix* species. In Algeria, *Tamarix* genus includes ten species. The present work deals with the phytochemical and biological studies as well as the antioxidant activities of methanol and ethyl acetate extracts obtained from *Tamarix gallica*, collected during the flowering. The phytochemical analysis of aerial parts of *Tamarix gallica* was undertaken. Ethyl acetate and methanol extracts led to the isolation of three known phenolic compounds: 3', 3, 5-tri hydroxy 4', 7- diméthoxy flavone, 5-hydroxy 4', 3, 7-trimethoxyflavone and isorhamnetine. The structures of these compounds were elucidated by MS and a series of 1D and 2D NMR analyses. Some extracts and the pure isolated compounds have been evaluated for their antioxidant activities through different methods: 1,1-diphenyl-2-picrylhydrazyl (DPPH) and cupric-reducing antioxidant capacity (CUPRAC) methods demonstrated important radical scavenging activity with the antiradical power (ARP) of 5 (in DPPH method), and trolox equivalent antioxidant capacity (TEAC) = 1. Since the antioxidant activity of plant has proved to be evident the cytotoxicity assays can be carried out in future.

Biography

Salah Akkal has completed his PhD at the age of 39 years from Constantine University. He was supervised on 4 MSc theses and 5 PD. He is professor for natural product chemistry since 2007 in Chemistry Department, Faculty of science. He has published more than 56 papers in reputed journals and has been serving as an editorial board member of reputed and has been serving as a reviewer for many articles in her specialization. He has attended more than 15 International Conferences He teaching all the organic courses for the students of Faculty of Science and Faculty of Technology in University of Constantine, Algeria.

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