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EDITORIAL

NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

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THE HAPPY ROAD OF KNOWLEDGE

(dedicated to the ASM Corresponding Member Nicon UNGUR's 70th anniversary)

Gheorghe Duca, Aculina Aricu, Veaceslav Kulcițki, Lidia Lungu

REVIEW PAPER

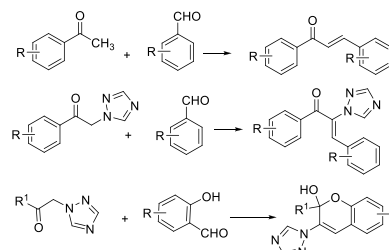
ORGANIC CHEMISTRY

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AROMATIC METHYL KETONES IN THE SYNTHESIS OF BIOLOGICALLY ACTIVE CHALCONES

Serghei Pogrebnoi

The review is dedicated to the synthesis of 1,3-diaryl-2-propen-2-ones derived from aromatic methyl ketones. The article highlights advancements in the synthesis of chalcones and hybrid compounds based on chalcones containing 1,2,4-triazole, tetrazole-pyrazoline, and chromenol moieties. The biological activity of the synthesized compounds is comprehensively discussed.



RESEARCH PAPER

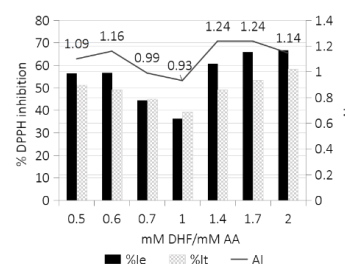
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ANTIOXIDANT CO-ACTIONS OF ASCORBIC AND DIHYDROXYFUMARIC ACIDS INVESTIGATED BY EPR SPECTROSCOPY

Crina Vicol, Alexandra Sârghi, Adrian Fifere, Gheorghe Duca

The study presents data on the antioxidant interaction between ascorbic and dihydroxyfumaric acids determined via DPPH method, by applying EPR spectroscopy. The type of antioxidant interaction is dependent on the concentration ratio of the ascorbic and dihydroxyfumaric acids, thus, at the mM DHF/mM AA ratios of 1.4 and 1.7 the highest synergistic effects of 1.24 have been noticed, but at the mM DHF/mM AA ratio of 1 – an antagonistic effect of 0.93 was registered.



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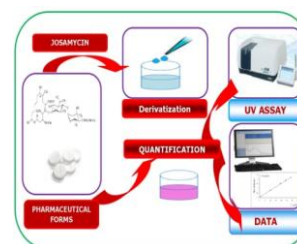
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DERIVATIZATION TECHNIQUES BASED ON CHARGE TRANSFER REACTIONS FOR SPECTROPHOTOMETRIC DETERMINATION OF JOSAMYCIN IN VARIOUS DOSAGE FORMS

Abdelghani Mahmoudi and Ann Van Schepdael

The developed spectrophotometric methods were based on charge transfer reactions of naphthoquinones with Josamycin. Methods validity was tested and the results were in accordance with ICH guidelines. Procedures showed successful adaptability for an easy analysis of this macrolide in various dosage forms and can be used for quality control purposes.



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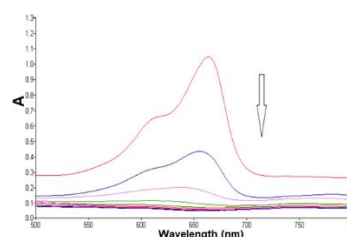
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SILVER AND ZINC NANOPARTICLES BIOSYNTHESIS USING LAUREL EXTRACT AND INVESTIGATION OF THE PHOTOCATALYTIC PROPERTIES

Recep Taş, Ebru Köroğlu, Ahmet Karakuş, Ali Savaş Bülbül, Nilay Akkuş Taş

This study explores the green synthesis of silver and zinc nanoparticles using Laurel extract as a reducing agent. The biosynthesized nanoparticles were characterized for size, shape, and structure. Photocatalytic activities were evaluated for potential environmental applications. Results show promising prospects for sustainable nanoparticle synthesis and efficient photocatalytic degradation.



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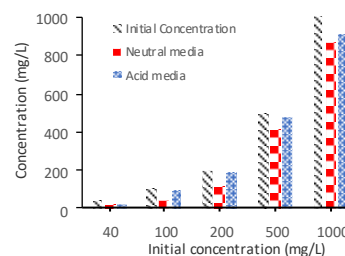
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THE EFFECT OF BIOSORBENT CONCENTRATION (CHAMOMILE TEA RESIDUES) ON LEAD REMOVAL FROM WATER SAMPLES

Kaltrina Jusufi, Enju Wang, Taha Fadlou Allah, Ali A. Shohatee, Sudhir Kumar Singh, Makfire Sadiku

This study examines the potential use of a low-cost biosorbent - chamomile tea residues, as an alternative to traditional adsorbents for removing Pb^{2+} ions from aqueous solutions. The results show that lead concentration is reduced under optimized conditions, achieving an impressive nearly 50% Pb^{2+} ions removal with a mere just 0.05 g of the waste material, depicting chamomile tea residues as efficient biosorbent in lead removal.



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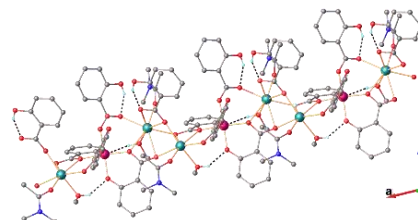
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SYNTHESIS AND STRUCTURAL STUDIES OF HETEROMETALLIC $\{[FeCa_2(Sal)_2(SalH)_3(DMA)_2(CH_3OH)_2]\}_n$ SALICYLATE COMPLEX

Viorina Gorinchoy, Olesca Cuzan, Sergiu Shova, Vasile Lozan

A new heterometallic iron(III) compound, derivative of salicylic acid, catena-poly[bis(methanol)-bis(*N,N*-dimethylacetamide)-tris(μ -salicylato)-bis(μ -salicyl)-dicalcium(II) iron(III)], has been synthesized and characterized by infrared spectroscopy, single-crystal X-ray diffraction and elemental analysis. Single-crystal X-ray diffraction study revealed that synthesized compound forms an 1D coordination polymer with general formula $\{[FeCa_2(Sal)_2(SalH)_3(DMA)_2(CH_3OH)_2]\}_n$. The compound crystallizes in the $P2_1/c$ space group of the monoclinic system with the following unit cell parameters: $a = 9.76785(9)$, $b = 37.3386(4)$, $c = 13.82575(12)$ Å, $\beta = 103.6421(9)^\circ$, $Z = 4$. The independent unit cell of the obtained compound contains one iron and two calcium ions, in which the iron(III) ion has an octahedral coordination sphere. The different coordination modes of the five molecules of salicylic anions revealed by IR analysis were confirmed by X-ray studies, showing that the salicylate anions play the role of bridging ligands and coordinate in three different ways, thus the carboxylic group forms bridges through three different coordination pathways, namely: bidentate, tridentate and pentadentate fashion.



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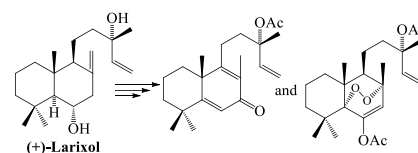
NATURAL PRODUCT CHEMISTRY AND SYNTHESIS

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SYNTHESIS OF CYCLE B FUNCTIONALIZED DERIVATIVES OF (+)-LARIXOL

Alexandru Ciocarlan, Lidia Lungu, Svetlana Blaja, Sergiu Shova, Aculina Aricu

The main purpose of this research was the synthesis of highly functionalized derivatives of (+)-larixol by combination of classical and nonconventional method, like dye-sensitized photooxidation with preservation of outside chain. As a result, a series of four new cycle B derivatives of (+)-larixol were obtained. The structure of all synthesized compounds was fully confirmed by spectral method (IR, 1H and ^{13}C NMR) and for compound containing endoperoxide functional group, additionally by single crystal X-ray diffraction analysis.



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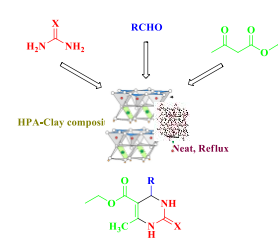
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GREEN AND EFFICIENT SYNTHESIS OF DIHYDROPYRIMIDINONE ANALOGUES VIA HPA-CLAY CATALYZED BIGINELLI REACTION

Nuzhat Rehman, Ayaz Mahmood Dar, Raja Feroz Ahmad Haji, Sharief-ud-din Khan, Deepak Pareek, Saleem Farooq, Bashir Ahmad Dar

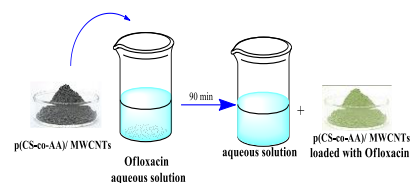
This study presents an eco-friendly method for synthesizing 3,4-dihydropyrimidin-2(1H)-ones (DHPMs) through the Biginelli reaction. A novel Heteropolyacid-Clay (HPA-Clay) catalyst, formed by immobilizing $H_5PV_2W_{10}O_{40}$ on Montmorillonite KSF clay, displays enhanced stability and catalytic efficiency. Operating under solvent-free, one-pot conditions, the process delivers DHPMs with high yields and shortened reaction times. Catalyzed by 2 mol% HPA-Clay, it adheres to green chemistry principles, emphasizing cost-efficiency, environmental sustainability, and recyclability. The catalyst consistently performs over multiple cycles, showcasing promise for advancing Biginelli reactions.



ADSORPTION BEHAVIOR OF CHITOSAN-MWCNTs NANOCOMPOSITE FOR THE ELIMINATION OF OFLOXACIN MEDICATION

Zainab Jasim Khudair and Zeina Mohammad Kadam

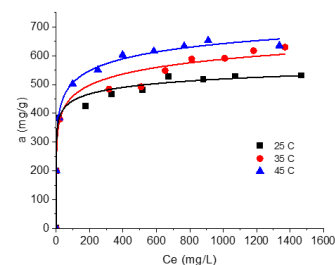
A nanocomposite of chitosan and poly acrylic acid grafting multi-walled carbon nanotubes (CS-co-AA)/MWCNTs was applied as adsorbent for Ofloxacin adsorption from water solutions. The isotherm constant (KF) of 0.218 and the separation factor (R^2) of 0.956 indicate a strong and desirable adsorption of OFL on p(CS-co-AA)/MWCNTs with a concentration of 100 mg/L at a temperature of 293K and an acidic medium with pH of 7.0.



COMPARATIVE STUDY OF THE LOCAL VEGETABLE ACTIVATED CARBON WITH COMMERCIAL ONES FOR ADSORPTION OF METHYLENE BLUE

Oleg Petuhov, Nina Timbaliuc, Irina Ceban (Ginsari), Silvia Cibotaru, Tudor Lupascu, Raisa Nastas

The purpose of this work was to compare the structural and sorption characteristics of local vegetal activated carbon obtained from apricot stones (AC-C, Republic of Moldova) with that of commercial activated carbons (Granucol® BI/GE/FA, Germany). According to the obtained results, the local vegetal activated carbon (AC-C) has proven to be comparatively effective with commercial ones (Granucol® type) in removing methylene blue dye from solutions.



ENHANCING DSSC PERFORMANCE THROUGH CHLOROPHYLL AND PORPHYRIN DYE INCORPORATION ON TiO₂-ZnO: AL COMPOSITES

Sri Wuryanti, Tina Mulya Gantina, Annisa Syafitri Kurniasetiawati

This research systematically investigates the impact of porphyrin and chlorophyll dyes derived from *Syzygium Paniculatum* on Dye-Sensitized Solar Cells (DSSC) performance, aiming to achieve maximum solar cell efficiency. The investigation involves utilizing fluorine-doped tin oxide coating with a TiO₂-ZnO composite. Results demonstrate that DSSCs based on TiO₂-ZnO: Al + chlorophyll produce an efficiency of 13.32%, while porphyrin (2:2:0.1) and (2:2:0.2) produce efficiencies of 8.91% and 13.95%, respectively. These findings highlight the potential of utilizing natural dyes for enhancing DSSC performance.

