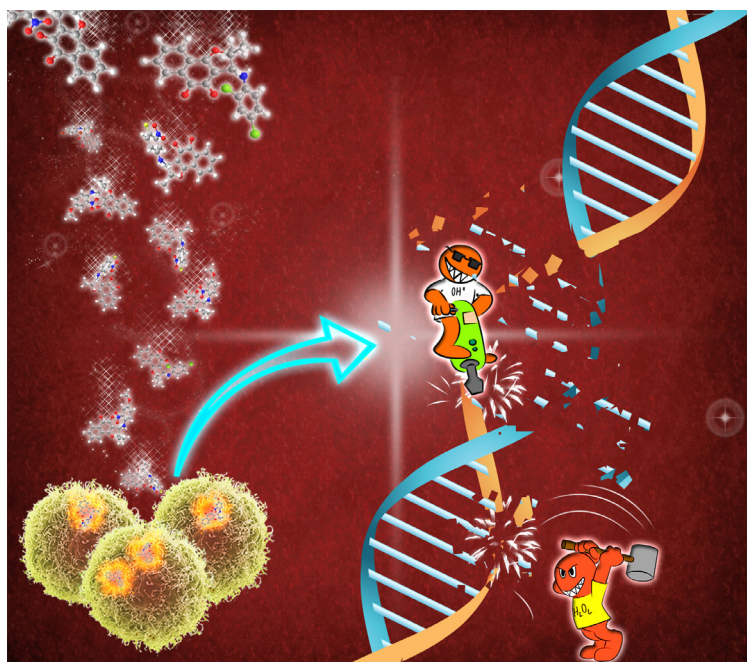


Cover Picture



Naphthoquinones are considered privileged structures due to their biological activities and structural properties. Among these substances, lapachones derivatives could be named magic quinones due to their potent antitumor activity. Our work describes this magic, showing the cytotoxic effects against human leukemia cell lines and the complex mechanism of action involving ROS generation and inhibition of DNA repair. Details are discussed in the Article **Potent Antileukemic Action of Naphthoquinoidal Compounds: Evidence for an Intrinsic Death Mechanism based on Oxidative Stress and Inhibition of DNA Repair** by Bruno C. Cavalcanti, Igor O. Cabral, Felipe A. R. Rodrigues, Francisco W. A. Barros, Danilo D. Rocha, Hemerson I. F. Magalhães, Dinara J. Moura, Jenifer Saffi, João A. P. Henriques, Tatiane S. C. Carvalho, Manoel O. Moraes, Cláudia Pessoa, Isadora M. M. de Melo and Eufânio N. da Silva Júnior on page 145.

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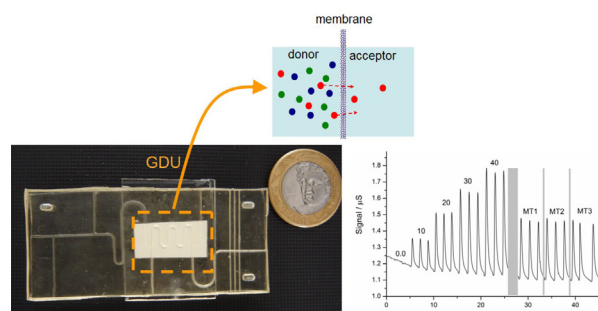
- 1 Honoring Our Heritage and Moving Ahead
Joaquim A. Nóbrega and Vanessa Hatje

Articles

5 A Microflow Analyzer with an Integrated Gas Diffusion Unit

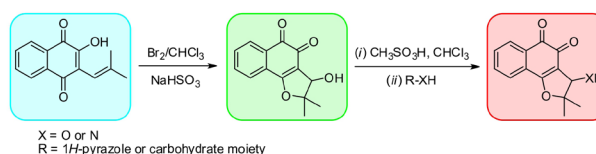
Alexandre Fonseca and Janaina da C. B. Silva

Graphical Abstract
Gas diffusion unit (GDU) in the proposed microflow analyzer and a diagram for the determination of ammonium



12 A New Approach for the Synthesis of 3-Substituted Cytotoxic Nor-β-Lapachones

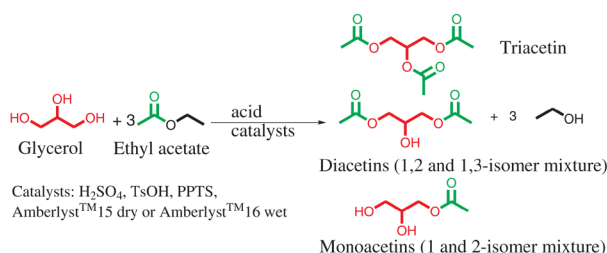
Mariana F. C. Cardoso, Illana M. C. B. da Silva, Helvécio M. dos Santos Júnior, David R. Rocha, Ana Jérsia Araújo, Claudia Pessoa, Manoel O. de Moraes, Letícia V. C. Lotufo, Fernando de C. da Silva, Wilson C. Santos and Vitor F. Ferreira



Graphical Abstract
The present study details new synthetic methodology for the synthesis of cytotoxic nor-β-lapachone derivatives substituted at C-3 with pyrazole or carbohydrate moieties

17 Synthesis of Bio-Additives: Transesterification of Ethyl Acetate with Glycerol using Homogeneous or Heterogeneous Acid Catalysts

Bruno A. Meireles and Vera Lúcia P. Pereira



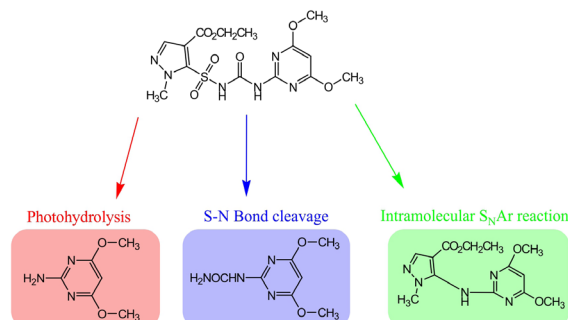
Graphical Abstract
An efficient production of acetins from glycerol via a transesterification process using homogeneous or heterogeneous acid catalysis was performed

26 Photochemical Degradation of Pyrazosulfuron-Ethyl in Aqueous Solution

Yanhui Wang, Liangwei Du and Lianyang Bai

SI online

Graphical Abstract
This work describes the photolysis of pyrazosulfuron-ethyl in aqueous solution. Three tentative pathways are proposed according to the experimental results: cleavage of the sulfonylurea bridge, an intramolecular S_NAr reaction and photodesulfonylation which proceeds by a homolytic nitrogen-sulfur cleavage

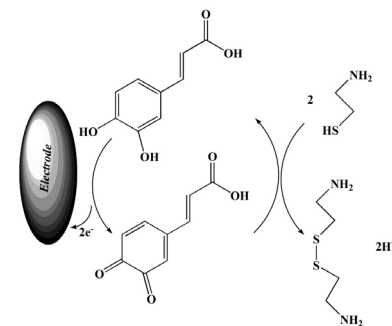


32 Electrocatalytic Determination of Cysteamine Using Multiwall Carbon Nanotube Paste Electrode in the Presence of 3,4-Dihydroxycinnamic Acid as a Homogeneous Mediator

Mohsen Keyvanfar, Samad Sami, Hassan Karimi-Maleh and Khadijeh Alizad

Graphical Abstract

A carbon paste electrode chemically modified with multiwall carbon nanotubes in the presence of 3,4-dihydroxycinnamic acid was introduced as a homogeneous mediator for voltammetric determination of cysteamine in aqueous solution



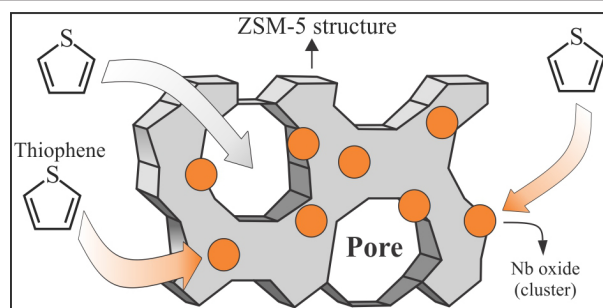
40 Characterization of ZSM-5 Modified with Niobium Pentoxide: the Study of Thiophene Adsorption

Rodrigo M. Cavalcanti, Ivoneide de C. L. Barros, José A. Dias and Sílvia C. L. Dias

SI online

Graphical Abstract

The focus of this work is the investigation of adsorption of the thiophene by Nb_2O_5 impregnated in ZSM-5 by means of kinetic and thermodynamic study of adsorption. The figure is for simple illustration of the process of adsorption

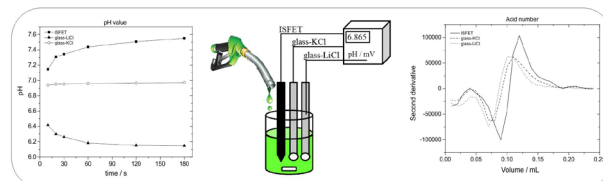


51 Evaluation Study of an Ion Selective Field Effect Transistor Electrode for Measuring Quality Parameters of Fuel Ethanol

Fabiano B. Gonzaga, Sidney P. Sobral, Carla M. Ribeiro and Mary A. Gonçalves

Graphical Abstract

This work presents an evaluation study of an ion selective field effect transistor (ISFET) electrode, compared to two glass electrodes containing different reference filling solutions, for measuring pH and acid number of the several hydrous and anhydrous fuel ethanol samples



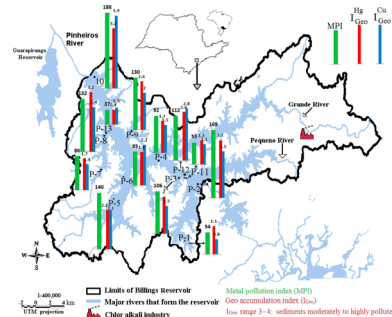
58 Assessment of Metal Concentration in the Billings Reservoir Sediments, São Paulo State, Southeastern Brazil

Marcos A. Hortellani, Jorge E. S. Sarkis, Luciana C. B. Menezes, Renata Bazante-Yamaguishi, Alder S. A. Pereira, Priscila F. G. Garcia, Lídia S. Maruyama and Paula M. Gênova de Castro

SI online

Graphical Abstract

The levels of Hg, Pb, Cd, Ni, Co, Cu, Mn, Fe, Al and Zn in sediments from 13 fishing points of the Billings Reservoir were assessed. Only Fe and Co seemed natural occurrence, the other metals are possibly associated with anthropogenic sources. Figure shows (MPI) for all elements and (I_{Geo}) to Hg and Cu with indicative of sediments moderately to highly polluted

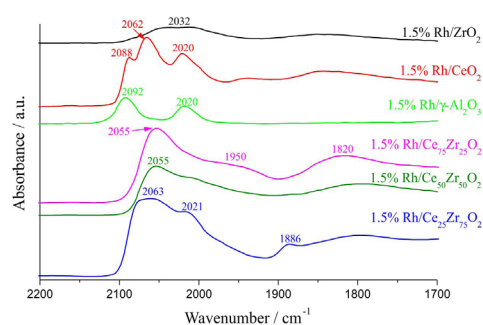


68 Partial Oxidation of Methane to Syngas on Rh/Al₂O₃ and Rh/Ce-ZrO₂ Catalysts

Raquel L. Oliveira, Isabela G. Bitencourt and Fabio B. Passos

Graphical Abstract

With Rh/CeZrO₂ catalysts, DRIFTS (diffuse reflectance infrared spectroscopy) experiments of adsorbed CO showed the formation of different rhodium species on various supports. The effect of the metal dispersion, oxygen storage capacity and activity of these catalysts for the partial oxidation of methane were discussed

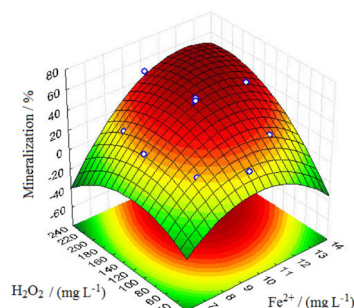


76 Degradation of the Herbicide Paraquat by Photo-Fenton Process: Optimization by Experimental Design and Toxicity Assessment

Alam G. Trovó, Oswaldo Gomes Junior, Antonio E. H. Machado, Waldomiro Borges Neto and Jader O. Silva

Graphical Abstract

Experimental design and response surface methodology were employed to evaluate the role (synergistic or antagonistic effects) of Fenton's reagents and to choose the better conditions that result in a higher efficiency of paraquat mineralization during photo-Fenton process



85 HPLC/DAD Determination of Rosmarinic Acid in *Salvia officinalis*: Sample Preparation Optimization by Factorial Design

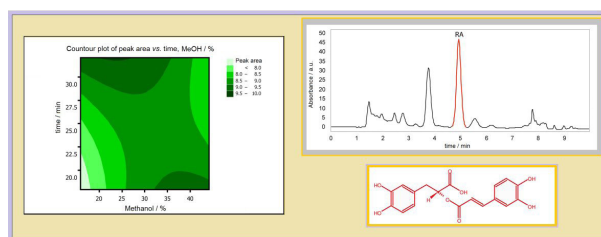


SI online

Karina B. de Oliveira and Brás H. de Oliveira

Graphical Abstract

Rosmarinic acid is a potent antioxidant found in sage and in other plant species. Results from HPLC analysis may be affected by auto-oxidation during solvent extraction of plant material. Factorial designs of experiments were used for optimization of the sample preparation. The use of antioxidants in the extraction solvent prevented the analyte degradation producing more accurate results



92 Modified Eremophilanes and Anti-Inflammatory Activity of *Psacalium cirsiifolium*

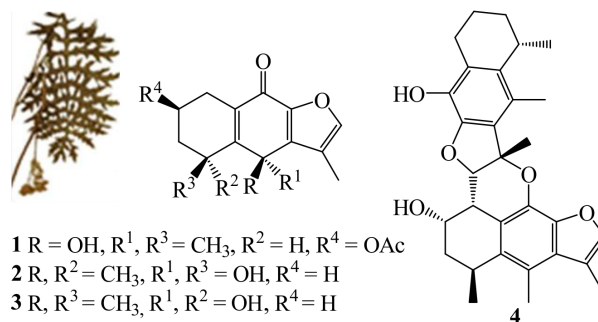


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Amira Arciniegas, Ana L. Pérez-Castorena, Antonio Nieto-Camacho, José Luis Villaseñor and Alfonso Romo de Vivar

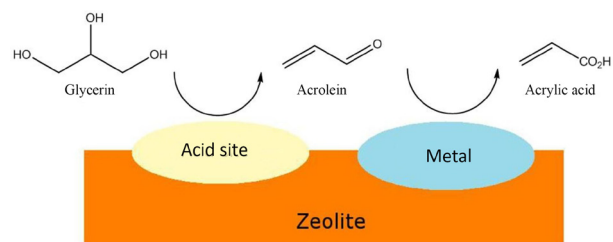
Graphical Abstract

Four new modified eremophilanes (1-4) were isolated from *P. cirsiifolium*. 2 α -Hydroxyadenosin B (4) showed anti-inflammatory activity (IC₅₀ 0.41 μ mol per ear) and a neutrophil inhibition effect measured by the myeloperoxidase assay similar to that of indomethacin



100 Oxidative Dehydration of Glycerol to Acrylic Acid over Vanadium-Impregnated Zeolite Beta

Carolina F. M. Pestana, Antônio C. O. Guerra,
Glaucio B. Ferreira, Cássia C. Turci and Claudio J. A. Mota

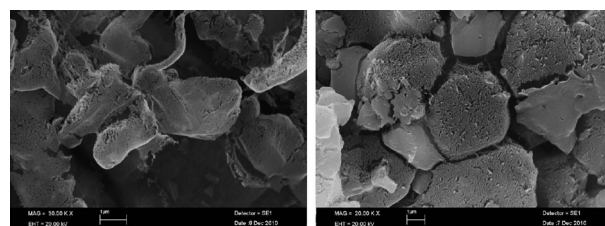


Graphical Abstract

The oxidative dehydration of glycerol to acrylic acid was studied over V-impregnated zeolite Beta. Acrylic acid was observed with approximately 20% selectivity at 548 K

106 Coprecipitative Preconcentration of Cr(III), Pb(II), Zn(II), Cd(II) and Mn(II) Ions with Al(III) and Fe(III) Carriers and Chromotrope 2B Reagent and their FAAS Determination in Various Water and Food Samples

Berrak Başbuğ and Şerife Tokaloğlu

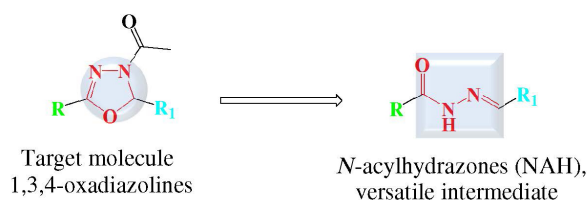


Graphical Abstract

Scanning electron microscopy (SEM) image of the Fe(III)-chromotrope 2B reagent with analytes Cd(II), Mn(II), Pb(II) and Zn(II) is shown. The surface morphology of the precipitate is changed in the presence of chromotrope 2B reagent

115 Synthesis and Testing of 3-Acetyl-2,5-Disubstituted-2,3-Dihydro-1,3,4-oxadiazole Derivatives for Antifungal Activity Against Selected *Candida* Species

Cledualdo S. de Oliveira, Bruno F. Lira, José M. Barbosa-Filho,
Jorge G. F. Lorenzo, Camilla P. de Menezes, Jessyca M. C. G. dos Santos, Edeltrudes de O. Lima and Petrônio F. de Athayde-Filho

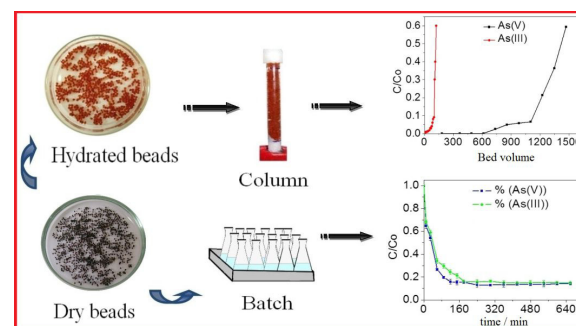


Graphical Abstract

N-acylhydrazones are particularly versatile for synthesis of compounds containing nitrogen. In this work, they were used as key substrates for the synthesis of 1,3,4-oxadiazolines biologically active

121 Preparation and Evaluation of Chitosan Beads Immobilized with Iron(III) for the Removal of As(III) and As(V) from Water

José de O. Marques Neto, Carlos R. Bellato, Jaderson L. Milagres,
Kenia D. Pessoa and Elson S. de Alvarenga

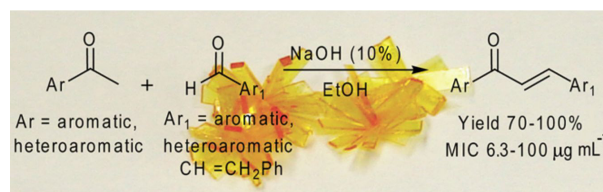


Graphical Abstract

The crosslinked chitosan-Fe(III) (Ch-FeCL) adsorbent was developed using Fe(III) immobilized on chitosan beads. After the drying process, the beads have a diameter of about 1 mm and are stable in air. The pH value for removal of As(III) and As(V) was 7.0. The adsorbent was successfully applied for the removal of As(III) and As(V) from natural water samples

133 Biological and Structure-Activity Evaluation of Chalcone Derivatives against Bacteria and Fungi

Wender A. Silva, Carlos Kleber Z. Andrade,
Hamilton B. Napolitano, Ivo Vencato, Carlito Lariucci,
Miriam R. C. de Castro and Ademir J. Camargo

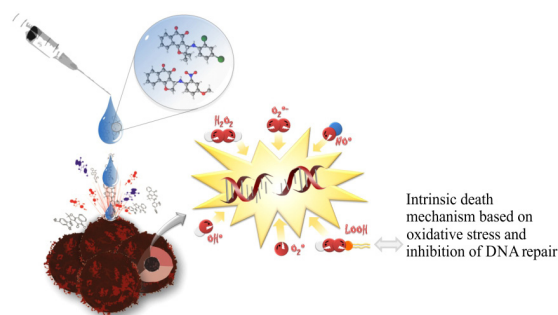


Graphical Abstract

The antibacterial and antifungal activities of several chalcones were determined by the minimal inhibitory concentration against different microorganisms (Gram-positive and Gram-negative bacteria and fungi). Chemometric studies were carried out in order to identify a potential structure-activity relationship

145 Potent Antileukemic Action of Naphthoquinoidal Compounds: Evidence for an Intrinsic Death Mechanism based on Oxidative Stress and Inhibition of DNA Repair

Bruno C. Cavalcanti, Igor O. Cabral, Felipe A. R. Rodrigues, Francisco W. A. Barros, Danilo D. Rocha, Hemerson I. F. Magalhães, Dinara J. Moura, Jenifer Saffi, João A. P. Henriques, Tatiane S. C. Carvalho, Manoel O. Moraes, Cláudia Pessoa, Isadora M. M. de Melo and Eufânio N. da Silva Júnior

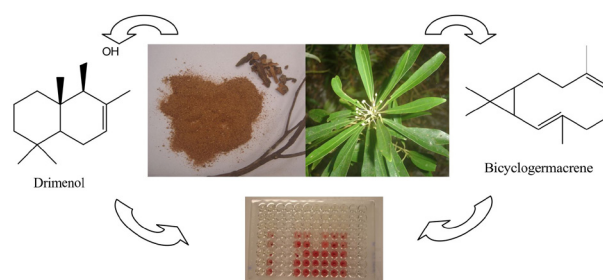


Graphical Abstract

The present study describes that *nor*-B-lapachone derivatives exhibited pronounced cytotoxic effects against four human leukemia cell lines. Complex studies were conducted to clarify the mechanism of action related to the cytotoxic activity of these derivatives

164 Chemical Characterization of Essential Oils from *Drimys angustifolia* Miers (Winteraceae) and Antibacterial Activity of their Major Compounds

Thalita G. Santos, Jocinei Dognini, Iêda M. Beghini, Ricardo A. Rebelo, Marcio Verdi, André L. de Gasper and Eduardo M. Dalmarco



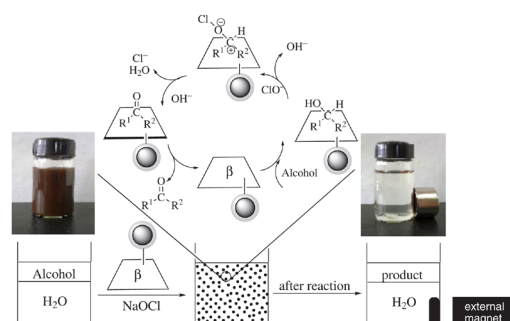
Graphical Abstract

Drimenol and bicyclogermacrene were isolated from the essential oils of *Drimys angustifolia*. Antibacterial activity (MIC) of these isolated compounds as well as of their binary mixtures was evaluated. No synergism was observed

Short Report

171 β-Cyclodextrin Coated Fe₃O₄ Nanoparticles: a Simple Preparation and Application for Selective Oxidation of Alcohols in Water

Jie Zhu, Peng-cheng Wang and Ming Lu



Graphical Abstract

A magnetically separable β-cyclodextrin (β-CD) was developed and used for oxidation of various alcohols. Water was used as the only solvent and NaOCl as a cheap and green oxidant. Facilitated recovery of β-CD and excellent efficiency for selective oxidation of alcohols were achieved