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Cover Picture



5-Aminolevulinic acid accumulation drives oxidative mitochondrial changes within the liver cells in hepatic in born disorders and acquired porphyrias, leading to liver fail. Details are presented in the Article **Liver Damage Induced by Succinylacetone: A Shared Redox Imbalance Mechanism between Tyrosinemia and Hepatic Porphyrias** by *Vanessa E. S. Cardoso, Fernando Dutra, Chrislaine O. Soares, Atecla N. L. Alves, Estela Bevilacqua, Sonia M. Gagioti, Carlos A. A. Penatti and Etelvino J. H. Bechara* on page 1297.

Contents

Communication

1145 Brønsted Acid-Catalyzed Dipeptides Functionalization through Azlactones

Igor F. dos Santos, Pedro P. de Castro, Angelina M. de Almeida SI online and Giovanni W. Amarante



Graphical Abstract The work reports the functionalization of peptide derivatives achieved through carbodiimide mediated intramolecular cyclization and an organocatalytic azlactone ring opening reactions.

Articles

1149 A Multi-Pumping Flow System with Pulsed Fluidization to **Evaluate Soil Capacity for Phosphate Adsorption** Jeane M. C. Machado, Wanessa R. Melchert, Elias A. G. Zagatto and Marcos Y. Kamogawa



Graphical Abstract A multi-pumping flow system with a fluidized bed column is proposed to determination of the soil capacity in adsorb phosphate.



Tailored Degree of Functionalization and Length Preservation of Multiwalled Carbon Nanotubes by an Optimized Acid Treatment Process

Vinícius G. Castro, Ingrid B. Costa, Magnovaldo C. Lopes, SI online Rodrigo L. Lavall, Kátia C. S. Figueiredo and Glaura G. Silva

Graphical Abstract

An efficient functionalization method of multiwalled carbon nanotubes (MWCNTs) was developed. Length reduction and degree of functionalization were statistically determined and can be tailored for different applications.





SI online Melissa S. Carvalho, Caroline Mayrinck, Ellen Raphael, Jefferson Bettini, Jefferson L. Ferrari and Marco A. Schiavon

Graphical Abstract

Weak electrolytes acted in the electrical double layer of the growing nanocrystals by competing with mercapto ligands for coordination with cadmium ions.



1177 Development and Characterization of Vitamin A-Loaded Solid Lipid Nanoparticles for Topical Application Mauricio Argimón, Mariano Romero, Pablo Miranda, Álvaro W. Mombrú, Iris Miraballes, Patricia Zimet and Helena Pardo



Graphical Abstract

In this work we present the development and characterization of a novel formulation of vitamin A-loaded solid lipid nanoparticles, containing Gelucire 44/14° and cetyl alcohol, prepared using hot homogenization.

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1212

Nanocomposite

Augusto Etchegaray

- 1185 Easy and Simple SiO₂ Immobilization of Lipozyme CaLB-L: Its Use as a Catalyst in Acylation Reactions and Comparison Lipozyme CaLB-L with Other Lipases Mateus Mittersteiner, Tayani M. Machado, Paulo Cesar de Jesus, Patrícia B. Brondani, Dilamara R. Scharf and Renato Wendhausen Jr. Immobilization Acyl donor, solvent **Graphical Abstract** ee. >99 % Herein we explore the immobilization of Lipozyme CaLB-L in SiO₂, its application in acylation reactions and a comparison of the selectivity $R = C_n H_{2n+1}$ n = 1, 2, 3, 4, 5, 6, 7, 9, 11 and 17 with other commercial lipases.
- 1193 Electrodeposition Study of Ni Coatings on Copper from **Choline Chloride-Based Deep Eutectic Solvents** Amanda S. C. Urcezino, Luis P. M. dos Santos, Paulo N. S. Casciano, Adriana N. Correia and Pedro de Lima-Neto
 - **Graphical Abstract** SEM images showing the Ni films morphologies involving: ChCl:2EG (left) and ChCl:2U (right) deep eutectic solvents (DES) associated with their corrosion performance.
- 1204 Volatile Organic Compounds (VOCs) Emitted by Ilex paraguariensis Plants are Affected by the Herbivory of the Lepidopteran Thelosia camina and the Coleopteran Hedypathes betulinus

Camila B. C. Martins, Diogo M. Vidal, Sandra M. S. Gomes and Paulo H. G. Zarbin

Graphical Abstract Main volatile organic compounds (VOCs) emitted by *I. paraguariensis* after the herbivory of Hedypathes betulinus and Thelosia camina.



NiCl₂·6H₂O in ChCl:2EG

45 °C

Not good

for corrosion

25 °C

70 °C

19.11

25 °C

3.53

Rp in 3.5 % NaCl / $k\Omega$ cm²



Graphical Abstract Laccase was successfully immobilized on hybrid nanocomposite, producing a selective biosensor for the quantification of 4-chlorophenol.

Renata K. Mendes, Beatriz S. Arruda, Elizabeth F. de Souza, Alessandra B. Nogueira, Omar Teschke, Luiz O. Bonugli and



NiCl₂·6H₂O in ChCl:2U

45 °C

9.27

70 °C

14.49

vi

1220 Toxic Elements and Microbiological Content of Food: Evidence from a Case Study in a Brazilian City Heavily Contaminated by Lead and Cadmium Kelly M. Macedo, Isabella M. M. da Silva, Fábio S. de Oliveira, Jacira T. Castro, Daniele C. M. B. dos Santos, Fernanda Freitas and Maykson C. de Jesus

Graphical Abstract Microbiological and toxic elements (Pb and Cd) analysis were successfully performed to evaluate food quality from a highly contaminated city in Bahia State, Brazil.



1229 Studies of the Interaction between BSA and a Plumeran Indole Alkaloid Isolated from the Stem Bark of *Aspidosperma cylindrocarpon* (Apocynaceae)

Otávio A. Chaves, Flávia S. M. Teixeira, Heloisa A. Guimarães, Raimundo Braz-Filho, Ivo José C. Vieira, Carlos Mauricio R. Sant'Anna, José Carlos Netto-Ferreira, Dari Cesarin-Sobrinho and Aurélio B. B. Ferreira

Graphical Abstract

Plumeran indole alkaloid (PIA) interacts strongly with bovine serum albumin (BSA). Site I is the hottest binding site for PIA and hydrogen bonding as well as hydrophobic interactions are the main intermolecular forces in the association BSA:PIA.

1237 Simultaneous Quantification of Three Chemical Types Bioactive Compounds in Radix Isatidis and Its Relevant Pharmaceutical Dosage Forms by HPLC-DAD Ping Xiao, Xiang Li, Jianwei Chen and Jin-ao Duan

Graphical Abstract

A simple and rapid high performance liquid chromatography coupled with diode array detector (HPLC-DAD) method was firstly developed for simultaneous quantification of three chemical types of bioactive components including an alkaloid, six nucleosides and four phenylpropanoids in Radix Isatidis and its relevant pharmaceutical dosage forms.



1247 Assessment of Triazine Herbicides Residual in Fruit and Vegetables Using Ultrasound Assisted Extraction-Dispersive Liquid-Liquid Microextraction with Solidification of Floating Organic Drop

> Yahya Pasdar, Meghdad Pirsaheb, Reza Akramipour, Toraj Ahmadi-Jouibari, Nazir Fattahi, Kiomars Sharafi and Hamid Reza Ghaffari

Graphical Abstract

A new ultrasound assisted extraction combined with dispersive liquidliquid microextraction with solidification of floating organic drop (UAE-DLLME-SFO) method has been developed for the preconcentration of traces of triazine herbicides from fruit and vegetables. In UAE-DLLME-SFO, sonication for extraction of compounds from semisoid and solid matrices and a low-density and less-toxic solvent were used to overcome the disadvantages of conventional DLLME.





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Monitoring of Gaseous Elemental Mercury Elias B. Santos, Stacy Ferlin, Anne H. Fostier and Italo O. Mazali



Graphical Abstract Gold nanoparticles film shows a potential applicability as passive sampler for indoor monitoring of gaseous elemental mercury (GEM).



Graphical Abstract Four new alkaloids, named Brazoides A-D, together with three known compounds were isolated from Justicia gendarussa Burm. F. (Acanthaceae).





1297

Detection of Counterfeit Durateston[®] Using Fourier Transform Infrared Spectroscopy and Partial Least Squares - Discriminant Analysis Diana B. L. Newas, Mássia Talhavini, Jaz William B. Brand

SI online Diana B. J. Neves, Márcio Talhavini, Jez Willian B. Braga, Jorge J. Zacca and Eloisa D. Caldas



succinylacetone (HT 1)

> abdominal pain tachycardia psychiatric disorders liver dysfunction hepatic cancer

Graphical Abstract Method using Fourier transform infrared spectroscopy (FTIR) and partial least squares - discriminant analysis (PLS-DA) to discriminate original and counterfeit samples of Durateston[®].



Graphical Abstract

Overproduction of ALA in SAME-treated rats impairs redox balance and mimics the liver mitochondrial damage long detected in liver biopsies of porphyric individuals.

1308 Differential Scanning Calorimetry and Infrared Spectroscopy Combined with Chemometric Analysis to the Determination of Coffee Adulteration by Corn Ariadne M. Brondi, Claudia Torres, Jerusa S. Garcia and Marcello G. Trevisan

Graphical Abstract

The results have demonstrate that is possible to detect and quantify the adulteration of coffee by corn, even at low concentrations (less than 1% m/m), employing differential scanning calorimetry and Fourier transform infrared spectroscopy coupled with chemometric analysis.



Iporphyrins

1315 Intercalation of Molybdate Ions into Ni/Zn Layered Double Hydroxide Salts: Synthesis, Characterization, and Preliminary Catalytic Activity in Methyl Transesterification of Soybean Oil

> Kamila Colombo, Swami A. Maruyama, Carlos I. Yamamoto and Fernando Wypych

Graphical Abstract

Layered nickel/zinc double hydroxide salt was intercalated with acetate anions, which were replaced by molybdate anions. After dehydration at 250 °C, the obtained material was investigated as solid catalysts in the methyl transesterification reaction of soybean oil. Conversions up 65% were obtained with 5% of reusable catalyst in relation to the mass of oil, methanol/soybean oil molar ratio of 35:1, temperature of 120 °C and 4 h of reaction.



Short Reports

1323 Assessment of Metabolism of the Eastern Oyster and Eastern Elliptio Using NMR Spectroscopy Haakil Lee



- Graphical Abstract Magnetic resonance image of eastern oyster and the biochemical schematic relating metabolites to biochemical pathways.
- 1331 Direct Determination of N-Nitrosoglyphosate in Technical Glyphosate Using Ion Chromatography with UV Detection Mário H. P. Santana, Adriano O. Maldaner, William G. Fraga and Fernanda V. Almeida



Graphical Abstract

A direct and simple ion chromatography (IC) method with UV detection for the determination of NNG in samples of technical glyphosate, below the maximum concentration determined by the Brazilian regulation.

- 1335 Secondary Metabolites from an Infusion of *Lippia gracilis* Schauer Using the LC-DAD-SPE/NMR Hyphenation Technique
- Sl online Valéria R. S. Moraes, Sérgio S. Thomasi, Ricardo F. Sprenger, Vilma M. J. Prado, Elizangela M. O. Cruz, Quezia B. Cass, Antônio G. Ferreira and Arie F. Blank

Graphical Abstract Chemical structures of the compounds isolated from *Lippia gracilis* Schauer.



 $P_{0} = 0$ $O_{H} = 0$ $R^{1} = R^{3} = OH, R^{2} = H$ $R^{1} = R^{3} = H, R^{2} = OH$



1341 Synergistic Effect in Drug Solubility by New Binary Micelles of Poly(ε-caprolactone)-poly(ethylene oxide) and F127[®] Lillian M. U. Dutra, Igor M. Cavalcante, Débora H. A. de Brito, Ícaro G. P. Vieira, Maria T. S. Trevisan, Maria E. N. P. Ribeiro, Stephen G. Yeates and Nágila M. P. S. Ricardo



Graphical Abstract Binary mixtures presented synergistic effect for drug release.

Additions and Corrections

1347 InCl₃/NaClO: A Reagent for Allylic Chlorination of Terminal Olefins Diego S. Pisoni, Douglas Gamba, Carlos V. Fonseca, Jesse S. da Costa, Cesar L. Petzhold, Eduardo R. de Oliveira and Marco A. Ceschi Vol. 17, No. 2, 321-327, 2006.

1347 Enantioselective Synthesis of (R)-Isocarvone from (S)-Perillaldehyde

Douglas Gamba, Diego S. Pisoni, Jessé S. da Costa, Cesar L. Petzhold, Antonio C. A. Borges and Marco A. Ceschi Vol. 19, No. 7, 1270-1276, 2008. Vol. 19, No. 7, S1-S11, 2008.

1348 Lewis Acid Promoted Friedländer Condensation Reactions between Anthranilonitrile and Ketones for the Synthesis of Tacrine and its Analogues

Jessé S. da Costa, Diego S. Pisoni, Claudia B. da Silva, Cesar L. Petzhold, Dennis Russowsky and Marco A. Ceschi Vol. 20, No. 8, 1448-1454, 2009. Vol. 20, No. 8, S1-S7, 2008.

1348 New Isopropylmaltol - Ti Synthesis and its Use as a Catalyst for Olefin Polymerization

Grasiela Gheno, Nara R. S. Basso, Marco A. Ceschi, Jessé S. Costa, Paolo R. Livotto and Griselda B. Galland Vol. 25, No. 12, 2258-2265, 2014.