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ACADEMICIAN TUDOR LUPASCU, HAPPY ANNIVERSARY!

Gheorghe Duca and Aculina Aricu

RESEARCH PAPER

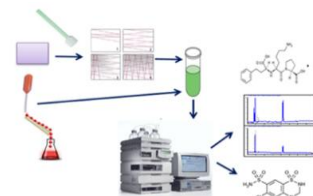
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SIMULTANEOUS QUANTITATIVE ESTIMATION OF LISINAPRIL AND HYDROCHLOROTHIAZIDE RESIDUES USING HPLC FOR CLEANING VALIDATION

Imeda Rubashvili, Natela Karukhnishvili, Khatuna Makharadze

A new, rapid and selective, HPLC method for simultaneous quantitative estimation of lisinopril and hydrochlorothiazide residues and sampling procedures from pharmaceutical manufacturing equipment surfaces were developed and validated. The sampling procedures have a good recovery (>80%). The limit of quantitation of the HPLC method - 0.155 µg/mL and 0.025 µg/mL for lisinopril and hydrochlorothiazide, respectively.



RESEARCH PAPER

ECOLOGICAL CHEMISTRY

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TOWARD A MULTIDISCIPLINARY STRATEGY FOR THE CLASSIFICATION AND REUSE OF IRON AND MANGANESE MINING WASTES

Daniela Guglietta, Girolamo Belardi, Giovanna Cappai, Barbara Casentini, Alicia Godeas, Stefano Milia, Daniele Passeri, Rosamaria Salvatori, Adalgisa Scotti, Vanesa Silvani, Emanuela Tempesta, Stefano Ubaldini, Francesca Trapasso

The aim of this paper is to evaluate an integrated multidisciplinary strategy for the characterization of mining waste, their possible recycling and reuse. The use of Fe-Mn rich wastes in arsenic removal and phosphorus recovery from water and the phytoextraction potential of metals and their possible recovery from biomass are evaluated.



RESEARCH PAPER

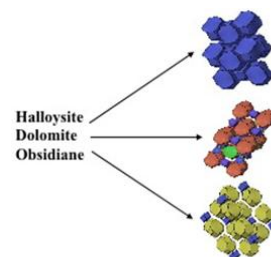
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SYNTHESIS OF DIFFERENT STRUCTURAL TYPES OF ZEOLITES IN THE HALLOYSITE-DOLOMITE-OBSIDIAN SYSTEM

Gunel Mamedova

Gismondine, laumontite and levyne type zeolites have been synthesized based on the natural minerals of Nakhchivan and the optimal crystallization conditions have been established. The initial components and the reaction products have been examined by X-ray diffraction, thermogravimetric and elemental analysis. It was found that changes in the temperature, alkalinity, ratio of starting components and time of processing of the reaction have different effects on the rate of formation of products, on their degree of crystallinity and on the phase purity of the obtained zeolite.



RESEARCH PAPER

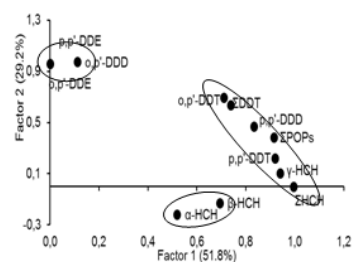
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ORGANOCHLORINE PESTICIDES RESIDUES IN SOIL OF SOROCA DISTRICT, REPUBLIC OF MOLDOVA

Elena Culighin

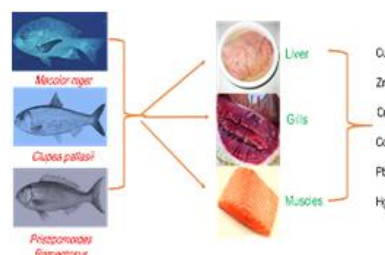
The level, composition, and distribution of hexachlorocyclohexane (HCH) and dichlorodiphenyltrichloroethane (DDT) residues were determined by GC-ECD technique in soil samples from the Soroca district, Republic of Moldova. The concentrations of DDTs and HCHs were up to 1100 and 640 mg/kg, respectively. The high concentration and the degradation rates of the pesticides in soil suggest that the contaminated sites are acting as continuous sources of pollution for the environment. Thus, remediation measures are required to reduce the level of the contaminants in soil.



ANALYSIS OF HEAVY METAL ACCUMULATION IN FISHES FROM THE COAST OF LAUTOKA, FIJI

Syed Sauban Ghani and Aman Deo

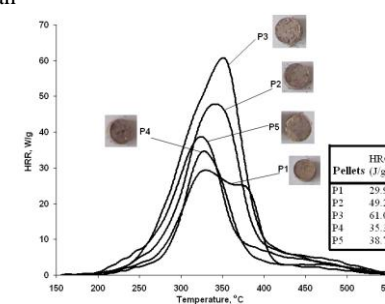
The concentrations of the accumulated heavy metals such as cadmium, lead, copper, mercury, zinc, and chromium have been determined in the muscles, gills and liver of the fish species of *Clupea pallasii*, *Macolor niger* and *Pristipomoides filamentosus* collected from the waters of the South Pacific Ocean around Lautoka in Fiji. Overall, the contents of heavy metals in all the samples were below the permissible limits, except for chromium that is slightly higher than the limits set by Food and Agriculture Organization of the United Nations and World Health Organization regulations, respectively. As anticipated, the muscles are still near the lowest concentration of all metal concentration. Significant variations in heavy metal concentrations were found between different tissues within each species of fish.



EVALUATION OF THE THERMAL BEHAVIOUR OF AGRICULTURAL WASTES FOR POSSIBLE USE IN THE BIOMASS PELLETS INDUSTRY

Alexandra Marcu, Gabriela Lisa, Ioana-Emilia Sofran, Ion Anghel, Manuel Serban

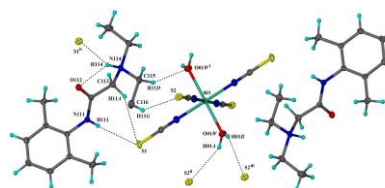
This paper tackles the potential uses of agricultural wastes (sawdust, sunflower seed shells, pumpkin seed shells, cherry pits, walnut shells, and green walnut shells) for the production of pellets. Combustion heat was determined for these wastes and their thermal decomposition in an air atmosphere was analysed. Five types of mini-pellets were made from different combinations of available wastes and their thermal behaviour was analysed by the microscale combustion calorimetry method.



RE-REFINEMENT OF CRYSTAL STRUCTURE OF BIS(LIDOCAINE) DIAQUATETRATHIOCYANATONICKELATE(II)

Koba Amirghanashvili, Alexandre Sobolev, Nani Zhorzholiani, Vladimer Tsitsishvili

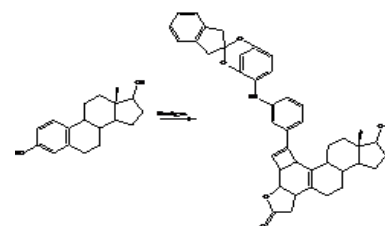
This paper reports on the synthesis and structure re-refinement of bis(lidocaine) diaquatetrathiocyanatonickelate(II). The compound with the formula $(LidH)_2[Ni(NCS)_4(H_2O)_2]$, where Lid is (2-(diethylamino)-N-(2,6-dimethylphenyl)acetamide), crystallizes in the monoclinic space group $P2_1/c$ with $a = 18.3509(5)$, $b = 7.6532(2)$, $c = 14.9585(4)$ Å, $\beta = 109.964(2)^\circ$, $V = 1974.57(9)$ Å³, and $Z = 2$. Coordination of the Ni^{2+} ion with thiocyanate ions and water molecules generates slightly distorted octahedral anion $[Ni(NCS)_4(H_2O)_2]^{2-}$ with N-bonded thiocyanate groups, while two protonated cations $LidH^+$ remain in an outer coordination field.



DESIGN AND SYNTHESIS OF TWO BICYCLO[3.3.1]NONANE-STEROID DERIVATIVES

Lauro Figueroa, Alejandra Garcimarer, Rolando Garcia, Francisco Diaz, Marcela Rosas, Virginia Mateu, Maria Lopez, Lenin Hau, Tomas Lopez, Abelardo Camacho, Yaritza Borges

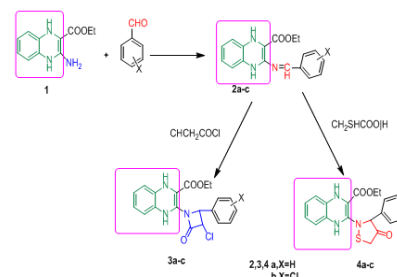
This study describes the preparation of two bicyclo[3.3.3]nonane-steroid derivatives from either estradiol or estrone using some reactions such as etherification, addition, nucleophilic substitution and cyclization. The chemical structure was evaluated through NMR spectroscopic analysis. The results showed higher yield for **11** compared with **12**. It is noteworthy that the reagents used in this investigation are not expensive and do not require special conditions for handling.



NOVEL β -LACTAMS AND THIAZOLIDINONE DERIVATIVES FROM 1,4-DIHYDROQUINOXALINE SCHIFF'S BASE: SYNTHESIS, ANTIMICROBIAL ACTIVITY AND MOLECULAR DOCKING STUDIES

Hajer Hrichi, Nadia Ali Ahmed Elkanzi, Rania Badawy Bakr

A series of novel isolated β -lactams **3a-c** and thiazolidinone derivatives **4a-c** were successfully synthesized from reactions of new Schiff's bases **2a-c** with chloroacetyl chloride and thioglycolic acid. The antimicrobial activity of the obtained compounds was assessed *in vitro* against gram-positive *Staphylococcus aureus* and gram-negative *Escherichia coli* bacteria and *Aspergillus flavus* and *Candida albicans* fungi. Furthermore, a molecular docking study was carried out and the results indicated that compounds **3b** and **4b** display comparable binding affinity scores as that of glutamate. These two compounds are promising candidates as antibacterial and antifungal agents that would deserve further investigations.



CHROMATOGRAPHIC ANALYSIS OF ORCHID EXTRACTS AND QUANTUM CHEMICAL CALCULATIONS OF INDIVIDUAL COMPONENTS INTERACTION WITH SILICA SURFACE

Olga Kazakova, Roman Ivannikov, Iryna Laguta, Oksana Stavinskaya, Viktor Anishchenko, Olga Severinovska, Ludmila Buyun

The most common phenolic components of sixteen orchid extracts were identified using high performance liquid chromatography and laser desorption/ionization mass spectrometry. The interaction between these compounds and silica silanol groups was studied using quantum chemical calculations. Results show that the strength of the interaction of phenols with silica increased in the following order: ferullic, feruloylquinic and fertaric acids <kaempferol, apingenin <<chlorogenic and caffeic acids, rhamnetin, quercetin, luteolin, epicatechin gallate. The common feature of compounds characterized by the strongest interaction with silanol groups is the presence of phenol ring with two neighbouring hydroxyl groups.

