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Abstracts Résumé

ESTUDIO FITOQUÍMICO Y ESPECTROSCÓPICO PRELIMINAR DE CINCO PLANTAS MEDICINALES DE CARMEN PAMPA (COROICO) BOLIVIA

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Keywords: Estudio fitoquímico preliminar, absorbancia UVB/UVA, *Rubus boliviensis* (khari-khari), *Castilleja arvensis* (vira-vira), *Baccharis genistelloides* ssp *crispa* (charara), *Liabum hastifolium* (toco-toco) y *Acmella ciliata* (laili-laili).

ABSTRACT

Five plant species widely distributed and with traditional medicinal use in the community of Carmen Pampa, *Rubus boliviensis* (khari-khari), *Castilleja arvensis* (vira-vira), *Baccharis genistelloides* ssp *crispa* (charara), *Liabum hastifolium* (toco-toco) and *Acmella ciliata* (laili-laili), were subjected to a preliminary phytochemical and spectroscopic study in order to select promising plant species for further studies. In the preliminary phytochemical study it was determined that the plant species studied have mainly phenolic compounds, tannins, triterpenes or steroids. Additionally the species *B. genistelloides* presents flavonoids and *A. ciliata* presents coumarins plus some alkaloids in the flowers. The spectroscopic study shows that all the extracts have a certain absorbance in the UVB and UVA region, but this is not comparable to the photoprotective known compounds as oxybenzone, or plant species studied for their photoprotective effect as *Baccharis papillosa*. However, the extract of major interest from this point of view is the extract of *L. hastifolium* (toco-toco). To complete the information, a deep literature review was done showing that *R. boliviensis* (khari-khari) and *C. arvensis* (vira-vira) have no previous chemical and biological studies, while *B. genistelloides* shows many bibliographic antecedents being currently used in commercial products in countries such as Brazil and Peru. Moreover *L. hastifolium* (toco-toco) has studies showing leishmanicidal activity which correlates with its traditional use for the treatment of wounds and has no chemical background so it was selected for further studies. The species *B. genistelloides* also shows interesting traditional and scientific background, but it was full studied and it is advisable to use the existing studies in the promotion of sustainable products with economic potential. Finally we also recommend develop studies on *R. boliviensis* because there are important chemical and pharmacological results in other species of genus *Rubus*.

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CUANTIFICACIÓN DE SAPONINAS EN RESIDUOS DE QUINUA REAL *CHENOPODIUM QUINOA* WILLD

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Keywords: Residues of quinoa, *Chenopodium quinoa* Willd, quantification of saponins, Foam method, UV spectrophotometry method, HPLC method.

ABSTRACT

This work was performed to quantify the performance of extracts and saponins in residues generated by exporters of quinoa in the departments of La Paz, Oruro and Potosi, determining that the extraction yields range from 36.0 % to 39.4 % w/w, while the percentage of saponins in the extract ranged from 47.3 % to 56.2 % and saponins in the residues from 17.3 % to 22.1 %. Additionally, a method was optimized for extraction of saponins by maceration with alcohol/water mixtures, considering the following parameters: mass/volume ratio of extraction, extraction time and percentage of EtOH/H₂O (v/v), determining that the best m/v ratio is 1/9. The optimum extraction time is 72 h and the better extraction mixture is 50/50 EtOH/H₂O. The percentage of saponins was determined using the methods of Foam, UV spectrophotometry and HPLC chromatography, showing that there are no major differences between the three methods, although the HPLC method is the best with less error and should be used as a control for the other methods which are cheaper. In addition, it is very important to use a standard of saponins from quinoa as reference sample in all the methods.

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INVESTIGACION Y DESARROLLO DE MATERIALES ARCILLOSOS PARTE I: CARACTERIZACIÓN QUÍMICA, MINERALÓGICA Y ESTRUCTURAL DE ARCILLAS DE VIACHA Y KELLANI

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Keywords: arcilla, glicolación, caracterización, estructural

ABSTRACT

It has been developed the chemical, mineralogical and structural analysis of two clay deposits in the department of La Paz, first in the area of Viacha (VIA-AMA), and the other one in the area of Kellani (KEL-PLO and KEL-ROJ). Both deposits have similar composition; clay material is in the order of 44 to 52 %, and granular material type quartz and -feldspar is in the order of 56 to 48 %. Additionally, it has been identified the important presence of iron, these materials are appropriate for red ceramic industry.

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BÚSQUEDA DE ESTRUCTURAS SECUNDARIAS ÓPTIMAS Y SUBÓPTIMAS DE UNA CADENA DE ARN UTILIZANDO INTELIGENCIA ARTIFICIAL

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Keywords: RNA, Secondary Structure, Neural Network, Artificial Intelligence

ABSTRACT

Ribonucleic acid (RNA) cannot exist in the form of linear chain, this molecule folds down for achieving its structure more stable through the formation of hydrogen bridges. The description of these bridges is called, the RNA secondary structure. From this, it is possible to deduce its tertiary structure of RNA. In many cases, this tertiary structure gives to RNA its properties, then, is interesting and important to know the secondary structure

of the RNA chains. Find these structures using experimental techniques (X-ray crystallography) is slow and long, therefore, it is interesting predict these structures through computational techniques of prediction such as Artificial Intelligence. In the present work has been used a Hopfield neural network to find different secondary structures stable and an unidirectional multilayer neural network trained with real biological examples, in order to choose the secondary structure more structure next to a 'biological' real structure, between suboptimal structures encountered by the Hopfield network. This work was carried out (training of the second network, verification of the ability of prediction and validation) thanks to several samples of micro-RNA of drosophilas. Through these neural networks has been predicting a RNA secondary structure close to the "real" to a micro-RNA *Sosophora Drosophila willistoni*.

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FLAVONOIDES DE *BACCHARIS BOLIVIENSIS*

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Keywords: *filifolin, xanthomicrol, 6-hidroxiluteolin, flavonoides polimetoxilados, Baccharis boliviensis.*

ABSTRACT

Two diterpenes and four flavonoids: **1** (5,7,3',4'-tetrahydroxy-6-methoxyflavanone; Filifolin), **2** (5,3'-dihydroxy-3,6,7,8,4'-pentamethoxyflavone), **3** (5,4'-dihydroxy-6,7,8-trimethoxyflavone; Xanthomicrol) and **4** (5,6,7,3',4'-pentahydroxyflavone; 6-Hydroxyluteolin), were isolated from the aerial parts of *Baccharis boliviensis* and identified by spectroscopic techniques of NMR 1D and 2D as well as by comparison with bibliographic data. The two diterpenes were previously reported in *B. boliviensis* while the four flavonoids are first reported in this species and being major secondary metabolites give a potential pharmacological interest because these compounds or similar compounds showed apoptotic or cytotoxic activity.

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CUANTIFICACIÓN DE RESVERATROL EN VINOS MEDIANTE HPLC

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Keywords: Resveratrol, Vinos, HPLC.

ABSTRACT

Resveratrol, a phenolic compound, was quantified in wines from Tarija - Bolivia by a method by Reverse Phase High Performance Liquid Chromatography (HPLC). The method was validated considering parameters such as standard deviation (S), coefficient of variation (CV), linear correlation coefficient (R), limit of detection (LOD) and limit of quantitation (LOQ). The amount of resveratrol found in the wines analyzed is somewhat high compared to values reported worldwide, giving an average of 7.7 ± 0.9 mg / L.

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DETERIORO CAUSADO POR MICROORGANISMOS EN TEXTIL ARQUEOLÓGICO Y LIENZOS

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Keywords: *biodeterioro, biocidas, arqueología, microorganismos, lienzo.*

ABSTRACT

In this paper we identified the organisms that cause deterioration of paintings and a textile fragment from the colonial era, provided by the Ministry of Culture Restoration Area - Bolivia and the National Museum of Archaeology - Bolivia consequently tested different essential oils and chemicals to prevent the growth of fungi isolated.

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ESTUDIO DEL SISTEMA Ru/TiO₂-ZrO₂ EN LA REACCIÓN DE OXIDACIÓN PARCIAL DE METANO

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Keywords: catalytic behavior, OPM, ruthenium and TiO₂-ZrO₂.

ABSTRACT

In this paper, we present a study of the catalytic behavior of supported ruthenium catalysts in the TiO₂-ZrO₂ system for the partial oxidation of methane (OPM) at low temperature relative to its structural characteristics.

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