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## Abstracts

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## DETERMINACIÓN DE PARÁMETROS DE SECADO POR ASPERSIÓN PARA LA OBTENCIÓN DE EXTRACTO SECO RICO EN SAPONINAS DE RESIDUOS DE ESCARIFICADO DE QUINUA

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Full original article

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**Keywords:** *Spray Drying, Saponins, Hydroalcoholic Extract, Chenopodium quinoa Residues*

**Palabras clave:** *Secado por Aspersión, Saponinas, Extracto Hidroalcohólico, Residuos de Chenopodium quinoa*

### ABSTRACT

*Determination of spray-drying parameters to obtain a dry extract rich in saponins from quinoa scarified residues.* Quinoa scarification residues are generated in large quantities in Bolivia and have a high content of saponins, compounds with various properties that give them a potential use in cosmetics, agriculture, health and others. For this reason, it is important to have methods to obtain dry extracts rich in saponins from these residues. In the present work, we determined some parameters for spray-drying the aqueous residual extract from a hydroalcoholic extraction process: EtOH:H<sub>2</sub>O (50:50) for 72 h, followed by removal of EtOH by rota-evaporation. For this, a 2<sup>3</sup> factorial experimental design was used, taking as independent variables: the concentration of the residual aqueous extract, the drying temperature and the speed of the air flow. It was determined that the significant variables to obtain a higher extraction yield in the spray drying process are: the drying temperature (100°C) and the speed of the air flow (4192 rpm), with a feed flow of 8 .0mL/min. The dry product obtained has a yield of 27.6% respect of quinoa residues and

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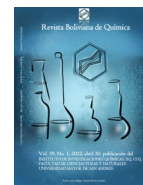
Determinación de parámetros de secado por aspersión

para la obtención de extracto seco rico en saponinas

de residuos de escarificado de quinua



68.73% of saponins. The spray-drying technique presented some advantages over the lyophilisation, such as the higher percentage of saponins in the dry extract and the shorter time used for drying.

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Mesoporous silicoaluminate materials (MCM-41, SBA-15 and MCF) by atrane route for cobalt catalyst

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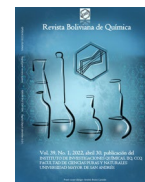
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Revista Boliviana de Química39(4), 106-125, Sep./Oct. 2022  
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DOI: 10.34098/2078-3949.39.4.2**MESOPOROUS SILICOALUMINATE  
MATERIALS (MCM-41, SBA-15 AND  
MCF) BY ATRANE ROUTE FOR  
COBALT CATALYST***Full original article**Peer-reviewed*Mauricio Claire Zeballos<sup>1,2,\*</sup>, Fatima L. Pardo Tarifa<sup>1</sup>, Luis G. Lopez N.<sup>1,2</sup>, Saúl Cabrera M.<sup>1,2+</sup>

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**Keywords:** *Mesoporous silicoaluminate, MCM-41, SBA-15, MCF, catalyst support, Cobalt Catalyst***Palabras clave:** *Silicoaluminatos mesoporosos, MCM-41, SBA-15, MCF, soporte de catalizador, catalizador de cobalto***ABSTRACT**

In this work, the synthesis of mesoporous silicoaluminum supports synthesized by the atrane route was performed. The obtained supports presented high homogeneity of the aluminum dispersion, high surface area and narrow pore size distribution. The synthesized mesoporous supports were: MCM-41, SBA-15 and MCF with 10% of Al<sub>2</sub>O<sub>3</sub> in the matrix of SiO<sub>2</sub>. Twelve percent of cobalt was added to these supports by the incipient wetness impregnation method. These materials were characterized by adsorption of Nitrogen (BET-BJH), Scanning Microscopy Electron (SEM), X-Ray Diffraction (XDR), H<sub>2</sub> Temperature-Programmed Reduction (TPR) and NH<sub>3</sub> Temperature-Programmed Desorption (TPD). According to their structural properties of these catalysts, a promising application in the Fischer-Tropsch syntheses (FTS) is identified.



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## ELECTRODEPOSICIÓN DE DIÓXIDO DE MANGANESO ELECTROLÍTICO EN SUSTRATOS DE CARBÓN A PARTIR DE LIXIVIADOS DE PILAS ALCALINAS AGOTADAS

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**Keywords:** Alkaline batteries, Manganese dioxide, Leaching, Carbon cloth, Carbon felt

**Palabras clave:** Pilas alcalinas, Dióxido de manganeso, Lixiviación, Telas de carbón, Filtros de carbón

### ABSTRACT

*Electrodeposition of electrolytic manganese dioxide on carbon substrates from leachates from exhausted alkaline batteries.* In the alkaline batteries of Zn/MnO<sub>2</sub>, the electrolytic manganese dioxide (EMD) is used as cathode and constitutes a very important part of household waste which contributes with heavy metals to the solid urban waste. This study describes the recovery of EMD by electro-oxidation on carbon cloth in acidic leached liquors from used



alkaline batteries. The maximum extraction yield for Mn and Zn were 43.68% ( $0.744 \text{ molL}^{-1}$ ) and 56.11% ( $0.7321 \text{ molL}^{-1}$ ) respectively. The voltammograms of a vitreous carbon electrode for EMD deposition from leached liquors were obtained between 0.0 and 1.4V vs ECS, and exhibit an anodic peak at 1.2V vs ECS. In addition, a cathodic peak appears at 0.97V vs ECS. The x-ray diffraction reveals the presence of nsutite ( $\gamma\text{-MnO}_2$ ) and manganite ( $\gamma\text{-MnOOH}$ ) for all deposits, and the morphology of the deposits was observed by SEM.

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**PICTORIAL MECHANISTIC VIEWS  
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WITHAFERIN A: THE STRUCTURAL  
DETERMINATION OF THE SIDE  
CHAIN, THE ORGANIC CHEMISTRY  
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Analytical review

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**Keywords:** Organic Chemistry, Withaferin A, *Withania somnifera*, Side chain, Structure determination, Mechanisms of Reactions.

**Palabras clave:** Química orgánica, Withaferin A, *Withania somnifera*, Cadena lateral, Determinación de estructuras, Mecanismos de reacciones.

**ABSTRACT**

This article is an approach to the historical development of the structural elucidation of organic natural substances that began with chemical degradations, isotopic labeling processes and sometimes synthesis, all chemical reactions. We used the work of Lavie et al. in: "Constituents of *Withania somnifera* Dun. III. The side chain of Withaferin A" as the study-object, complemented by other bibliographic material, and we proposed mechanistic routes of each reaction used by the authors. The objective was to explain these processes from the didactic point of view of reaction mechanisms.