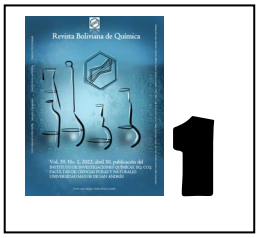
Revista Boliviana de Química

Rev. Bol. Quim. ISSN 0250-5460
Rev. boliv. quim. ISSN 2078-3949

Bolivian Journal of Chemistry

Vol. 39, No. 2, 2022

Abstracts



REVISTA BOLIVIANA DE QUÍMICA
ISSN 0250-5460 Rev. Bol. Quim. Paper edition
ISSN 2078-3949 Rev. Bol. Quim. Electronic edition
Rafael J. Tornero J. et Waldo Yapu M. RBQ Vol.39, No.2, pp. 26-36, 2022

Received 09 17 2021 39(2); May./Jun. 2022
Accepted 06 18 2022
Published 06 30 2022; DOI:10.34098/2078-3949.39.2.1

Received 09 17 2021
Accepted 06 18 2022
Published 06 30 2022

Vol. 39, No.2, pp. 26-36, May./Jun.2021
Revista Boliviana de Química

39(2), 26-36, May./Jun. 2022
Bolivian Journal of Chemistry
DOI:10.34098/2078-3949.39.2.1

DESCONTAMINACIÓN DE SUPERFICIES IMPREGNADAS CON ACEITE LUBRICANTE AUTOMOTRIZ USADO (ALAU), MEDIANTE PROCESOS DE ADSORCIÓN, PERSORCIÓN Y DESORCIÓN CON ULEXITA

Full original article *Peer-reviewed*

Rafael Juan Tornero Jimenez*, Waldo Yapu Machicado

Instituto de Investigaciones Químicas IIQ, Facultad de Ciencias Puras y Naturales FCPN, Universidad Mayor de San Andrés UMSA, P.O. Box 303, Calle Andrés Bello s/n, Ciudad Universitaria Cota-Cota, La Paz, Bolivia, rafaeltornero@yahoo.com, https://iiq.umsa.bo

Keywords: *Adsorption, Desorption, Persorption, Ulexite, Aceite Lubricante Automotriz Usado*

Palabras clave: *Adsorción, Desorción, Persorción Ulexita, Used Automotive Lubricant Oil*

ABSTRACT

The continuous and massive use of automotive lubricating oil (ALO) in Bolivia, and its disposal or used automotive lubricating oil (UALO) represents an environmental pollution problem of high priority in terms of its elimination. Due to the lack of environmental regulations in this regard, the situation has been aggravated, for example when these liquids come into contact with solid surfaces (soil or materials) due to accidental spills, generating their irreversible contamination. In this research work we present an alternative for the decontamination of surfaces contaminated by UALO, proposing a study of physicochemical and environmental processes of adsorption, persorption and desorption. Ulexite ($NaCaB_5O_6(OH)_6(H_2O)_5$) was applied to the spill in a mass ratio of 5:1 (g/g) with respect to the contaminant. The mixture is a solid containing UALO molecules dispersed and adsorbed on the ulexite surface. The adsorption of UALO on ulexite can be reversed using potable water at 80°C. This allows the ulexite to rehydrate and the UALO can be separated from the ulexite, and it can be applied again. The recovery performance of ulexite is proportional to the exposure time. On the other hand, desorption will occur at 30 minutes minimum and complete after 2 hours maximum for total desorption. The definitive elimination of the contaminant (UALO), after its separation thanks to mutual insolubility with water or phase separation, is achieved according to international elimination standards, that is, by combustion to give carbon dioxide and water, both of which are biodegradable environmental components. This procedure was not carried out in the present investigation. Alternatively, UALO could be submitted to a regeneration process or recycling procedures.

REVISTA BOLIVIANA DE QUÍMICA
ISSN 0250-5460 Rev. Bol. Quim. Paper edition
ISSN 2078-3949 Rev. boliv. quim. Electronic edition
Huascar A. Bedregal S. et Patricia Mollinedo P., RBQ Vol.39, No.2, pp. 37-43, 2022

Received 05 30 2022 39(2); May./Jun. 2022
Accepted 06 26 2022
Published 06 30 2022; DOI:10.34098/2078-3949.39.2.2

Received 05 30 2022
Accepted 06 26 2022
Published 06 30 2022

Vol. 39, No.2, pp. 37-43, May./Jun.2022
Revista Boliviana de Química

39(2), 37-43, May./Jun. 2022
Bolivian Journal of Chemistry
DOI: 10.34098/2078-3949.39.2.2

PERFIL LIPÍDICO DE TRUCHAS, UNA BREVE REVISIÓN BIBLIOGRÁFICA

Short review *Peer-reviewed*

Huáscar A. Bedregal Salinas Vega, Patricia Mollinedo Portugal*

Food Chemistry Laboratory, Instituto de Investigaciones Químicas IIQ, Chemical Sciences Department, Facultad de Ciencias Puras y Naturales FCPN, Universidad Mayor de San Andrés UMSA, P.O. Box 303, Calle Andrés Bello s/n, Ciudad Universitaria Cota-Cota, phone +59122795878, La Paz, Bolivia, pamollinedo@umsa.bo; , habsvjanc@gmail.com www.umsa.bo

Keywords: *Trout, Oxidative degradation, PUFAs, Lipids profile, MUFA, ω-3, ω-6*

Palabras clave: *Trucha, Degradación oxidativa, AGPI, Perfil lipídico, AGMI, ω-3, ω-6*

ABSTRACT

Due to the nutritional benefits obtained from the intake of fish meat, its consumption has been constantly increasing, a trend that is not unrelated to Bolivia, which imports approximately 30% of the fish it consumes. In addition to its mineral components, its lipid composition is very important. Polyunsaturated fatty acids or PUFAs are an important nutrient for humans because they are incorporated into cell membranes and metabolism. In addition, they are important in the development and functioning of the nervous system. The fish diet incorporates PUFAs in their tissues in both the omega 3 (ω-3) and omega 6 (ω-6) position, which, in turn, makes them a source of these lipids for humans. The quality of this source is modifiable depending on the food that is supplied to the fish, in the same way, the incorporation of fat-soluble vitamins to their food makes their lipids more resistant to oxidation. This is important since unsaturated lipids are more susceptible to oxidation due to the reactivity of the double bonds. It is important to point out the correct balance between the consumption of PUFAs, monounsaturated and saturated fatty acids because this relationship has an effect on the reduction of atherosclerosis. The nutritional quality of fish lipids is affected by multiple factors, such as climate, diet, and farming conditions..

3

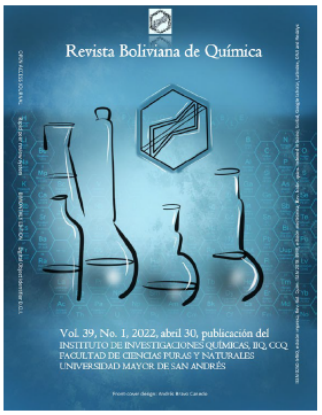
REVISTA BOLIVIANA DE QUÍMICA
ISSN 0250-5460 Rev. Bol. Quim. Paper edition
ISSN 2078-3949 Rev. boliv. quim. Electronic edition
Grover Castañeta et al. RBQ Vol.39, No.2, pp. 44-55, 2022

Received 06 17 2022 39(2); May./Jun. 2022
Accepted 06 26 2022
Published 06 30 2022; DOI:10.34098/2078-3949.39.2.3

Received 06 17 2022
Accepted 06 26 2022
Published 06 30 2022

Vol. 39, No.2, pp. 00-00, May./Jun. 2022
Revista Boliviana de Química

39(2), 00-00, May./Jun. 2022
Bolivian Journal of Chemistry
DOI: 10.34098/2078-3949.39.2.3



CAMBIOS FISICOQUÍMICOS POR EXPOSICIÓN A LA RADIACIÓN SOLAR EN TUBÉRCULOS DE *OXALIS TUBEROSA*, "OCA" CULTIVADOS EN BOLIVIA

Full original article *Peer-reviewed*

Grover Castañeta[1], Ruddy Castañeta[2], J. Mauricio Peñarrieta[1,*]

[1]Food Chemistry Laboratory, Instituto de Investigaciones Químicas IIQ, Chemical Sciences Department, Facultad de Ciencias Puras y Naturales FCPN, Universidad Mayor de San Andrés UMSA, P.O. Box 303, Calle Andrés Bello s/n, Ciudad Universitaria Cota-Cota, phone +59122795878, La Paz, Bolivia, gcastaneta1@gmail.com; jmpenarrieta1@umsa.bo; www.umsa.bo.

[2]Carrera de Física, Facultad de Ciencias Puras y Naturales FCPN, Universidad Mayor de San Andrés UMSA, Calle Andrés Bello s/n, Ciudad Universitaria Cota-Cota, La Paz, Bolivia, rcastanetac@fcpn.edu.bo; www.umsa.bo.

Keywords: *Andean food, ºBrix, Sweetening, Oxalidaceae, Solar radiation, Sunlight, Tuber*

Palabras clave: *Alimento andino, ºBrix, Endulzamiento, Oxalidaceae, Radiación solar, Asoleo, Tubérculo*

ABSTRACT

As part of a Bolivian food valorization program based on its chemical properties, some physicochemical changes were studied in the tubers of *Oxalis tuberosa*, a species known in the Andean region under the name of "oca". The tuber of *Oxalis tuberosa* is a representative food of the Andes of South America and is the third most cultivated tuber in Bolivia after potatoes and cassava. Oca is a good source of starch, minerals, vitamin C and phenolic compounds. Despite being a food with such characteristics, its production is declining, since it is mostly intended for self-consumption. In order to increase its natural sweetness (increase in free sugars) its exposure to sunlight prior to consumption is customary, making thus, more acceptable to the consumers. In the present work, the influence of total solar radiation on some physicochemical properties was investigated: soluble solids, color, humidity, titratable acidity and pH of some oca accessions produced in La Paz, Bolivia. Freshly harvested varieties and varieties from local markets were evaluated and exposed to the sun for 10 days (5 h/day). The results indicate that most of the samples do not lose moisture and titratable acidity significantly, but there are significant changes in soluble solids,

color and pH. It was possible to determine that the optimum sun exposure time to reach maximum sweetness ranges from 5 to 10 days in freshly harvested samples and between 3 to 6 days in commercial samples.