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**BASIC PHYTOCHEMICAL
SCREENING AND ANTIBACTERIAL,
ANTIFUNGAL AND ANTIOXIDANT
PROPERTIES OF SYZYGIUM CUMINI,
A TREE FROM GUYANA**

**CRIBADO FITOQUÍMICO BÁSICO Y
PROPIEDADES ANTIBACTERIANAS,
ANTIFÚNGICAS Y ANTIOXIDANTES DE
SYZYGIUM CUMINI, UN ÁRBOL DE
GUYANA**

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Full original article

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Keywords: *Syzygium cumini*, Antioxidant power, Antifungal activity, Phytochemical screening, antibacterial property.

Palabras clave: *Syzygium cumini*, Poder antioxidante, Actividad antifúngica, Screening fitoquímico, Propiedades antibacterianas.

ABSTRACT

Syzygium cumini or Jamun is an evergreen tropical tree in ornamental plant family Myrtaceae. The plant material (leaves) of *Syzygium cumini* (Jamun) was collected at the Institute of Applied Science and Technology (IAST), University of Guyana, Turkeyen Campus. Leaves were dried in oven at 50-60 °C for 72 h. The moisture content was calculated. The dried leaves were grounded and extracted in ethanol, methanol, ethyl acetate, and chloroform solvents, successively. Extracts were collected and evaporation of solvent was done on rotavapour. The respective solvent was added to viscous semi solid liquid extract to make up the desired volume of extract solution. The micro-organisms (*Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*) were obtained from GPHC, Georgetown, Guyana. The antioxidant, antimicrobial and antifungal activity of the different extracts was assessed by methods reported in the literature. The maximum and the minimum antioxidant power was exhibited by the methanol and the chloroform extracts, respectively. The chloroform and the ethyl acetate extracts were found to have the maximum and the minimum antibacterial activity against *Escherichia coli*, *Staphylococcus aureus*, as well as the antifungal activity against *Candida albicans*, respectively by the disc diffusion method. Phytochemical analysis of the *Syzygium cumini* leave extracts revealed the presence of carbohydrates, terpenoids, proteins, amino acids and flavonoids.

**EVALUATION OF THE
ANTIOXIDANT ACTIVITY OF THE
AQUEOUS AND METHANOLIC
EXTRACTS OF SEEDS OF *PERSEA
AMERICANA* MILL, VARIETY HASS,
FROM THE STATE ARAGUA IN
VENEZUELA**

**EVALUACIÓN DE LA ACTIVIDAD
ANTIOXIDANTE DE LOS EXTRACTOS
ACUOSO Y METANÓLICO DE
SEMILLAS DE *PERSEA AMERICANA*
MILL, VARIEDAD HASS,
PROVENIENTES DEL ESTADO
ARAGUA EN VENEZUELA**

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Short report

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Keywords: *Avocado, Antioxidant, Total phenols, FRAP, DPPH, ABTS.*

Palabras clave: *Palta, Antioxidante, Fenoles totales, FRAP, DPPH, ABTS.*

ABSTRACT

The high content of bioactive compounds in *Persea americana* seed has generated great interest worldwide due to its various potentialities, in which its antioxidant capacity stands out. The objective of the study was to evaluate the antioxidant activity of the aqueous and methanolic extracts of *Persea americana* Mill seeds, variety Hass, sold in supermarkets in the city of Maracay, Venezuela. The total phenol content of the extract was determined through the Folin-Ciocalteu method to then evaluate the antioxidant activity by three chemical methods (DPPH, FRAP and ABTS). A higher concentration of total phenolic compounds was obtained in the methanolic extract, with a statistical difference with respect to the aqueous extract. The antioxidant activity was higher in the methanolic extract in the three methods used ($p < 0.05$). These results show the high antioxidant power of the avocado seed, considered as a waste product, which allows proposing strategies that allow its use for medicinal purposes.

MANUFACTURE OF GEOPOLYMERIC MORTARS FROM ASH COMING FROM THE UBINAS VOLCANO, ASSESSMENT OF ITS MECHANICAL, PHYSICAL AND MICROSTRUCTURAL PROPERTIES

FABRICACIÓN DE MORTEROS GEPOLIMÉRICOS A PARTIR DE CENIZA PROVENIENTE DEL VOLCÁN UBINAS, EVALUACIÓN DE SUS PROPIEDADES MECÁNICAS, FÍSICAS Y MICROESTRUCTURALES

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Full original article

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Keywords: *Volcanic ash, Geopolymer, Concrete, Compressive strength.*

Palabras clave: *Ceniza volcánica, Geopolímero, Hormigón, Resistencia a la compresión.*

ABSTRACT

In this study, it has been proposed a geopolymerization method that uses a low liquid/solid (L/S) ratio and the piston as a compaction method which has favored the compression strength achieved considering that the synthesis of geopolymers is characterized by the use of an alkaline solution with a high L/S ratio (greater than 0.45).

The volcanic ashes from the Ubinas volcano (Peru's most active volcano) that are rich in Al_2O_3 , SiO_2 and CaO were alkaline activated with sodium hydroxide (NaOH) and sodium hydroxide with addition of sodium silicate ($NaOH+Na_2SiO_3$), both solutions with 12 M concentration, with a low liquid/solid (L/S) ratio of 0.1 and solid:solid

(S:S) ratio of 1:1. Volcanic ashes and Portland cement were used as initiators and the local sand was used as aggregate for both of them.

The mechanical, physical (density and water absorption) and structural properties were determined by X-ray diffraction and the microstructure was determined by scanning electron microscope from the mortars. As a result, it has been proven that the use of the NaOH solution favors the dissolution of alumina and silica and therefore the polycondensation, mainly when using an initiator with a high composition of Al_2O_3 , SiO_2 and CaO . Besides, it has been demonstrated that the excess of NaOH (using the sodium silicate solution) inhibits the polycondensations. Therefore, this method has the advantage of a lower use of L/S ratio than the other methods. It has been obtained a compressive strength of 24.6 ± 1.7 MPa with the geopolymer mortars activated with NaOH and 14.2 ± 2.3 MPa with the geopolymer mortars activated with NaOH+ Na_2SiO after 28 days of curing being these values higher than those for mortars in Norm NTP 334.051.

**MICROPLASTICS: A
CONTAMINANT THAT GROWS IN ALL
ENVIRONMENTAL AREAS, ITS
CHARACTERISTICS AND POSSIBLE
RISKS TO PUBLIC HEALTH FROM
EXPOSURE**

**MICROPLÁSTICOS: UN
CONTAMINANTE QUE CRECE EN
TODAS LAS ESFERAS AMBIENTALES,
SUS CARACTERÍSTICAS Y POSIBLES
RIESGOS PARA LA SALUD PÚBLICA
POR EXPOSICIÓN**

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Short review

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Keywords: *Plastic pollution, Microplastics, Plastic waste, Public Health, Environment, Microplastics in South America.*

Palabras clave: *Contaminación plástica, Microplásticos, Residuos plásticos, Salud pública, Medio ambiente, Microplásticos en Sudamérica.*

ABSTRACT

Microplastics (MPs) have become a major challenge for environmental science, analytical chemistry, and environmental toxicology in recent years. These have attracted worldwide attention in their category of emerging pollutants due to their interactions and persistence in the environment, in addition to their origin from poor management in the treatment of urban center waste, as well as poor industrial practices and their use. indiscriminate. MPs are currently scattered all over the planet, from oceans to rivers, sediments, soil, air, living organisms and even in food resources and remote areas of the planet such as the Arctic and mountainous glaciers. Therefore, this review aims to inform about the formation, types, sources, interaction with pollutants and possible health consequences of PMs present in the environment. We seek to raise awareness that currently people are living alongside MPs without realizing it. In addition, this review also includes a brief tour of the latest studies that have been carried out in South America, conceptualizing the local and regional reality with respect to this global problem.

**ASSESSMENT OF THE
MICROBIOLOGICAL QUALITY BY
MEANS OF SELECTIVE
CHROMOPHORIC INDICATORS AND
MALTA EXTRACT OF DRINKS OF
AMAZONIAN FRUITS TRADED IN
COBIJA, BOLIVIA**

**EVALUACIÓN DE LA CALIDAD
MICROBIOLÓGICA MEDIANTE
INDICADORES CROMOFÓRICOS
SELECTIVOS Y EXTRACTO DE MALTA
DE BEBIDAS DE FRUTAS
AMAZÓNICAS COMERCIALIZADAS EN
COBIJA, BOLIVIA**

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Full original article

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Keywords: *Microbiological, Artisanal drink, Amazonian, Fruits, Chromophore, Malt extract.*

Palabras clave: *Microbiológica, Bebida artesanal, Amazónico, Cromóforo, Extracto de malta.*

ABSTRACT

Handcrafted soft drinks made from Amazonian fruits and commercialized in Cobija, Bolivia have a high consumption index among local inhabitants, this, due to their flavor and natural refreshing features and their low-cost. To the best of our knowledge, to the present date, there are not reports on the microbiological quality of such drinks, which are not usually pasteurized. The survey among the personnel and the retail establishments on the hygienic conditions of elaboration was carried out through the use of an observation questionnaire. The results showed that 69% of the establishments did not comply with Good Hygienic Manufacturing and Handling Practices. Samples of each of the retail establishments were carried out during 3 weeks, completing a total of 78 samples of water and fruit drinks. Subsequently, the pH of each sample was determined. It was observed that the fruit waters present values that are below the limits established by the Bolivian Norm NB 512 (6.5 to 9.5). Fruit soft drinks have values that are within the limit allowed by the Peruvian Technical Standard NTP 203.110-111, which establishes that the pH must be less than 4.50. The contamination by microorganisms of water and fruit soft drinks was determined by using the Filter Membrane (CFU) method NB 31003. The results obtained in samples of water and fruit soft drinks indicated that they were contaminated with the presence of 92 % of total coliforms, 69% of *Escherichia coli* and 81% of fungi and yeasts, exceeding the limits allowed by NB 512 and NTP 203.110-111.