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Disposable face/cloth masks during COVID-19 pandemic: a precursor for the synthesis of valuable bioproducts for Environment.

Máscaras faciales/de tela desechables durante la pandemia de COVID-19: un precursor para la síntesis de bioproductos valiosos para el medio ambiente.

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ABSTRACT

Different surgical, cloth, and disposable face masks have become required personal protective equipment for preventing the COVID-19 pandemic. Disposable face masks are produced using thermoplastic polymers, and because they may be quickly transformed into useful bioproducts and because their use has significantly increased, their detrimental environmental effects are a very severe subject of worry. The most often utilised interventions for respiratory protection and other airborne transmission are face masks and respirators. This review article highlighted numerous methods and opportunities for contaminated masks, as well as how to turn waste into the most useful byproducts. With these methods, it is important to completely stop the COVID-19 virus from spreading through the air.

Keywords: COVID-19, Disposable face masks, Bioproducts, Pyrolysis

RESUMEN

Diferentes mascarillas quirúrgicas, de tela y desechables se han convertido en equipos de protección personal obligatorios para prevenir la pandemia de COVID-19. Las máscaras faciales desechables se fabrican con polímeros termoplásticos, y debido a que pueden transformarse rápidamente en bioproductos útiles y debido a que su uso ha aumentado

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Detection of Azoxystrobin in Environmental Samples using FTIR Spectroscopic Method

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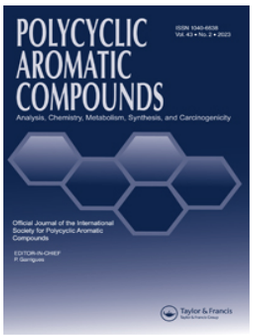
ABSTRACT

A new UV-Visible spectrophotometric method for determination of fungicide azoxysrtobin was developed. The method is based on the bromination of azoxystrobin to form dibromoazoxystrobin which react with Potassium iodide, Potassium iodate mixture in the presence of leucomalachite green (LMG) to form a bluish green colored complex. Characterization was done for the synthesis of bluish green colored complex by using UV-Vis spectrophotometer and FTIR methods. As a result, the UV-Visible absorption spectrum was observed at 615 nm. The limits of detection and limits of quantification were observed at 0.0019 µg ml^{-1} and 0.0059 µg ml^{-1} respectively. We have also studied the conformational and functional group (such as most characteristic band of O-H stretching frequency observed at 3346.49 cm^{-1}, Bonding N-H symmetrical is 1645.50 cm^{-1}, C=C bending is 691.07 cm^{-1}, Symmetrical stretching C-N is 1493.13 cm^{-1} and 1404.70 cm^{-1}, C-C stretching and other vibrational is 1059.74 cm^{-1}). Involved in the complexation between azoxystrobin and bromination by FTIR method. This developed method has been successfully applied for the detection of azoxystrobin in various environmental samples. Beer's law obeyed over the concentration range of 0.5-13 µg mL^{-1} in final solution volume of 10 ml. The reproducibility assessed by carrying out seven days replicate analysis of a solution containing 5 µg ml^{-1} of azoxystrobin in a final solution of 10 mL. The molar absorptivity of the colour system is 1.936×10^{6} L mol^{-1} cm^{-1} and Sandell's sensitivity is 0.800×10^{-4} µg cm^{-2}. The relative standard deviation (RSD) for the absorbance value was found to be 1.9%. The suggested method is free from the interference of other toxicant agents. The analytical parameters were optimized and the method was applied to the determination of azoxystrobin in water, soil and food samples.

Key words : *UV-Visible Spectrophotometer, FTIR, Azoxystrobin, Bromination and Leucomalachite green (LMG).*

Introduction

Pesticides are the major basis with signicant role in ensuring safety from the destruction caused by many pests. At present time, the viable food production can't achieved without the vital role of pesticides. Pesticides are applied directly on the plants which are able to determine for long time in vegetables. When pesticides are use in the field, it is assessed that only about 1% of the pesticide is able to



Polycyclic Aromatic Compounds

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Distribution, Variations, Fate and Sources of Polycyclic Aromatic Hydrocarbons and Carbon in Particulate Matter, Road Dust, and Sediments in Central India

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Article

Evaluation of Selected Medicinal, Timber and Ornamental Legume Species' Seed Oils as Sources of Bioactive Lipophilic Compounds

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Abstract: Bioactive lipophilic compounds were investigated in 14 leguminous tree species of timber, agroforestry, medicinal or ornamental use but little industrial significance to elucidate their potential in food additive and supplement production. The tree species investigated were: *Acacia auriculiformis*, *Acacia concinna*, *Albizia lebbeck*, *Albizia odoratissima*, *Bauhinia racemosa*, *Cassia fistula*, *Dalbergia latifolia*, *Delonix regia*, *Entada phaseoloides*, *Hardwickia binata*, *Peltophorum pterocarpum*, *Senegalia catechu*, *Sesbania sesban* and *Vachellia nilotica*. The hexane-extracted oils of ripe seeds were chromatographically analysed for their fatty acid composition (GC-MS), tocochromanol (RP-HPLC/FLD), squalene and sterol (GC-FID) content. A spectrophotometrical method was used to determine total carotenoid content. The results showed generally low oil yield (1.75–17.53%); the highest was from *H. binata*. Linoleic acid constituted the largest proportion in all samples (40.78 to 62.28% of total fatty acids), followed by oleic (14.57–34.30%) and palmitic (5.14–23.04%) acid. The total tocochromanol content ranged from 100.3 to 367.6 mg 100 g^{-1} oil. *D. regia* was the richest and the only to contain significant amount of tocotrienols while other oils contained almost exclusively tocopherols, dominated by either α-tocopherol or γ-tocopherol. The total carotenoid content was highest in *A. auriculiformis* (23.77 mg 100 g^{-1}), *S. sesban* (23.57 mg 100 g^{-1}) and *A. odoratissima* (20.37 mg 100 g^{-1}), and ranged from 0.7 to 23.7 mg 100 g^{-1} oil. The total sterol content ranged from 240.84 to 2543 mg 100 g^{-1}; *A. concinna* seed oil was the richest by a wide margin; however, its oil yield was very low (1.75%). Either β-sitosterol or Δ5-stigmasterol dominated the sterol fraction. Only *C. fistula* oil contained a significant amount of squalene (303.1 mg 100 g^{-1}) but was limited by the low oil yield as an industrial source of squalene. In conclusion, *A. auriculiformis* seeds may hold potential for the production of carotenoid-rich oil, and *H. binata* seed oil has relatively high yield and tocopherol content, marking it as a potential source of these compounds.

Keywords: Fabaceae; Leguminosae; phytostanol; bean; tocochromanol

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1. Introduction

Plant seeds contain various biologically active substances, including lipophilic substances such as phytosterols, tocochromanols and carotenoids, and are major sources of these micronutrients in the diet. Legume seeds tend to have low oil content; exceptions to this include soy, peanuts and *Pongamia pinnata*; however, low oil content does not exempt

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Comparative Analysis of Traditional Oriental Herbal Fruits as Potential Sources of Polyphenols and Minerals for Nutritional Supplements

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Abstract: There are a plethora of plant species in India, which have been widely used in vegetable dishes, soups, desserts and herbal medicine. In addition to these traditional uses, today there is the extra possibility of also being able to use these plants in the nutritional supplements industry due to their favorable antioxidant and mineral composition. In this sense, thirteen vegetable species—*Chanania lanzan*, *Ziziphus mauritiana*, *Nilumbo nucifera*, *Terminalia catappa*, *Terminalia arjuna*, *Terminalia bellirica*, *Terminalia chebula*, *Lagenaria siceraria*, *Luffa aegyptiaca*, *Praecitrullus fistulosus*, *Benincasa hispida*, *Citrullus lanatus* var. lanatus and *Cucurbita maxima*—have been analyzed. In this paper we discuss the distribution of polyphenols and minerals (Na, K, Mg, Ca, Al, P, S, Cr, Mn, Fe, Cu, Zn, Mo, As and Pb) in different seed parts (the rhizome, pericarp, carpel, seed coat and kernel) of the above species and their possible use in the nutritional supplements industry. The concentrations of total polyphenols, flavonoids and minerals ranged from 407 to 3144 mg rutin hydrate/100 g, 24 to 3070 mg quercetin/100 g and 1433 to 7928 mg/100 g, respectively. K, Ca, P and S were abundant in these herbal fruits. In two species of herbal fruits, *Terminalia arjuna* and *Terminalia chebula*, only part of the seed structure was suitable for use in nutritional supplements.

Keywords: herbal seeds; fruit seeds; polyphenols; minerals; nutritional supplements

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1. Introduction

Seeds contain vital nutrients and ultra-trace elements, which reduce the risk of cardiovascular disease and diabetes [1] and promote different healthy functions in human beings [2,3]. Many plants also contain polyphenols and flavonoids with strong antioxidant and disease-preventing properties, and could be valuable sources of these compounds in the preparation of nutritional supplements [4–7].

Ziziphus mauritiana (as *Ziziphus jujuba* (L.) Gaertn., and *Ziziphus jujuba* (L.) Lam.) is widely cultivated, especially in southeastern Asia, as a commercial crop [8]. The fruit is eaten raw or preserved and its seeds contain a number of medically active compounds, including saponins, triterpenes, flavonoids and alkaloids. It is hypnotic, narcotic, sedative, stomachic and tonic, and is used internally in the treatment of palpitations, insomnia, nervous exhaustion, night sweats and excessive perspiration [9]. *Buchanania lanzan* is a medium-sized deciduous tree with edible fruits and seed kernels. Its seed kernel and extracted kernel oil are used in the preparation of several Indian dishes and are a potential source of phytochemicals, tocopherols and essential fatty acids including oleic, linoleic and linolenic acid [10].