سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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سامية محمد مصطفى

جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات

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بعض الوثائق الأصلية تالفة

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بالرسالة صفحات لم ترد بالأصل

Ain shams university

Faculty of science

Chemistry department

Physicochemical characterization and comparison of different starches isolated from some Egyptian food/feed crops of different cultivars

Submitted By

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B.Sc. of science, Botany-chemistry Dept., faculty of science,

Ain shams University, 2008

A Thesis Submitted in Partial Fulfillment of

The Requirement for the Master Degree

In Chemistry

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For the MSc Degree of science

In Chemistry

To

Chemistry Department

Faculty of Science

Ain Shams University

Ain shams university

Faculty of science

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Physicochemical characterization and comparison of different starches isolated from some Egyptian food/feed crops of different cultivars

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ABSTRACT

Different starches were isolated from different crop cultivars to study their physicochemical properties. The study based on selecting one cultivar of taro, namely Local variety, two cultivars of corn namely, Hi-Tech 2031 and Giza TWC 352 Y 352, two cultivars of wheat, namely Wheat Durum Beni Suef 1 and Bread Wheat Misr 1 as well as two cultivars of potato, namely Sponta and Lady Rosetta. The physicochemical studies involved, proximate analysis that included contents of ash, fat, moisture, protein and total carbohydrate. Other analytes like total organic matter (TOM), total organic carbon (TOC) were also quantified. Different elements in isolated starches were quantified using either Graphite Technique or inductively coupled plasma technique (ICP), where contents of arsenic (As), cadmium (Cd), chromium (Cr), lead (Pb), nickel (Ni), selenium (Se), tin (Sn), cobalt (Co), antimony (Sb), molybdenum (Mo), copper (Cu), manganese (Mn) were quantified using graphite technique, while, contents of calcium (Ca), iron (Fe), zinc (Zn), potassium (K), sodium (Na), phosphorus (P) and magnesium (Mg) were quantified using ICP technique. The degree of hydrolysis of the isolated starches as well as the amylose-amylopectin profile, pH values, water binding capacity (WBC) solubility and swelling power at different temperatures were investigated. Spectroscopic studies, like Fourier transform infrared spectrometry (FT-IR) were achieved to study the characteristic bands of each cultivar, like OH bands, aliphatic CH stretching frequencies, beside the finger print region of each cultivar. The X-ray diffraction pattern (XRD) of the crystal structure of the isolated starches were studied to assure the crystallinity type of the starches (A or B types).

Keywords: Physicochemical properties, isolated starches, amylose, amylopectin, water binding capacity, solubility, swelling power, Ft-IR, XRD.

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