

Dedication

I dedicate the essence of my fruitful work dyed with the flavour

Of hope to:

my mother and my father, candles of life;

my sisters, flowers of life;

Extended source of mercy to my brother Mohamed Almohandes;

my beautiful friend, Afraa Ali

my lovely, Fadooly

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ABSTRACT

The present research was designed to conduct a proximate analysis of tamarind (*Tamarindus indica*) seeds and to investigate the physicochemical properties of the oil.

The proximate composition of tamarind seeds including moisture, protein, fiber, oil, ash, and carbohydrate were initially determined. Carbohydrate was found to be the major component comprising (58.59%), while moisture was (5.12%), protein (26.71%), fiber (2.79%), oil (3.26 %) and ash (3.53 %).

The oil (yield 3.2 %) was obtained by solvent extraction using hexane (1:6, solid / hexane, w/v) under reflux for 6h. *T. indica* oil was tested for its physical and chemical properties, which were found to be moisture content (0.27%), refractive index at 30⁰C (1.4606), colour (3.5 for blue , 7.3 for yellow and 4.3 for red), density(0.855 g/cm³), saponification value (195.25 mg KOH/g), peroxide value (17.22 mg O₂/g) and acid value (3.5 mg KOH/g).

Extracted oil was also analyzed by Gas Chromatography-Mass spectroscopy, on which thirty three different components were identified, of which linoleic acid (37.59%) is predominant, followed by Oleic acid (16.37%), palmitic acid (11.72%) and lignoceric acid (10.56%).

مستخلص الأطروحة

صمم هذا البحث لتحليل مكونات بذور شجرة العرديب وفحص الخصائص الفيزيائية والكيميائية للزيت. التحليلات التي أجريت علي بذور شجرة العرديب شملت الرطوبة , البروتين , الألياف , الزيت , الرماد والكربوهيدرات. حيث وجد ان الكرهيدرات تمثل المكون الرئيسي (58,59)٪ , وكانت الرطوبة (5.12)٪ بينما البروتين (26.71)٪ , الألياف (2.79)٪ , الزيت (3.26)٪ والرماد (3.53)٪. تم الحصول علي الزيت بنسبة (3.2 %) من البذرة وذلك باستخدام مذيب الهكسان بنسبة 6:1 علي التوالي تحت مكثف ارتجاعي لمدة ست ساعات , كما تم اجراء الاختبارات للخصائص الفيزيائية والكيميائية للزيت متضمنة مكون الرطوبة وكانت نسبته (0.27%) ومعامل الانكاسار في 30 درجة مئوية كان (1.4606) بينما كانت درجات الالوان (3.5) للارزق , (7.3) للاصفر و (4.3) للاحمر . وكانت كثافة الزيت (0.855) جرام زيت / سم³ , وقيمة التصبن (195.25) ملجرام هيدروكسيد بوتاسيوم / جرام زيت) , رقم البيروكسيد (17.22) ملجرام من جزئ الاكسجين/ جرام زيت) , وقيمة الحموضة وجدت (3.5) ملجرام هيدروكسيد بوتاسيوم / جرام زيت).

الزيت المستخلص تم تحليله بواسطة جهاز الطيف اللوني لمطاييف الكتلة, حيث تم التعرف علي ثلاث وثلاثون مكونا منها حمض اللينوليك بنسبة (37.59)٪ هو السائد، يليه حمض الأوليك بنسبة (16.37)٪، وحمض البالمتيك بنسبة (11.72)٪ وحمض اللقينوكرليك بنسبة (10.56) % .

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