بسم الله الرحمن الرحيم

(وَمِن ثَمَرَاتِ النَّخِيلِ وَالْأَعْنَابِ تَتَّخِذُونَ مِنْهُ سَكَرًا وَرِزْقًا حَسَنًا
ۗ إِنَّ فِي ذَٰلِكَ لَآيَةً لِّقَوْمٍ يَعْقِلُونَ)

(سورة النحل الاية 67)

Dedication

To

The soul of my beloved father

My mother

My brothers, sisters

Uncle Mustafa , Osman and Saeed

Acknowledgment

After thanks to Allah the most Gracious the most merciful

I am mostly indebted to my supervisor Dr. Elfatih ahmed

Hassan for guidance and advice

Also I would thanks the National Project Coordinator Khalid

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A.abdalkarim, Africa city of technology,

Who helped me to complete this work,

Also I extend my thanks to everyone helped me in completing

this project.

Abstract

This study was conducted on seeds of *Acacia Senegal* var *Senegal* (family *leguminosae*) which were collected from Elobayed in Kordufan state Sudan during the season 2014.

Solvent extraction technique was utilized to extract the oil from the *A. senegal* seeds. The oil content of these seed was found to reach 20%w/w. The extracted oil was subjected to physicochemical evaluation, the results showed that its free fatty acid was 3.8g/l, it saponification value was 848.4ml/g, iodine value was 89.144ml/g, Esterification value was 844.6 ml/g, peroxide value was 6ml/g, its moisture content was 0.8%, density was 0.915g/cm^3, refractive index 1.4628, colour was 1.5/29.04(red/yellow). The extracted oil was converted into biodiesel through transesterification reaction, and the product Biofuel was subjected to IR and GC-MS analysis. Results showed it possesses good qualities as biofuel.

ملخص البحث

أجريت هذه الدراسة على بذور الهشاب (عائلة *leguminosae*) التي جمعت من الابيض ولاية شمال كردفان في السودان خلال عام 2014 .تم استخلاصه زيت بذور الهشاب عن طريق الاستخلاص بالمذيب وكانت نسبة الاستخلاص 20%(وزن/وزن).

تم اجراء الاختبارات الفيزيوكيميائيه علي الزيت المستخلص وكانت النتائج كالتالي: كمية الاحماض الدهنية الاحره 3.8ملجم/لتر، قيمة التصبن 848.4ملجم/اتر،قيمة رقم اليود 89.144ملجم/لتر، وقيمة الاستره 844.6ملجم/لتر، وقيمة البيروكسيد 6ملجم/لتر وكانت قيمة الرطوبه 0.8%،واللون (احمر/اصفر)1.5 /29.04 ،وقيمة معامل الانكسار 1.4628،وقيمة الكثافه 0.915جرام لكل سنتمير مكعب.

تم تحويل الزيت لوقود حيوي عن طريق الاستره في وسط قاعدي وتم تحليله بجهاز الاشعة تحت الحمراء وكروماتوغرافيا الغاز/ ومطيافيه الكتله وقد اوضحت النتائج ان الوقود الحيوي الذي تم تحضيره يمتلك خصائص كيموفيزيئة جيده.

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