

# الآية

قال تعالى :

يَا مُوسَى لَوْنِ لِنَصْدُقِرَ عَلَى طَعَامٍ وَ أَحِدٍ فَادْعُ لِنَارِ بَكَ يُخْرِجُ لِنَا مِمَّا  
تُنْبِي قُلُوبَهُمُ الْوَرَقِ تَنْظُرُهُمْ فَوَمِهَا وَ عَدَسِهَا وَ بَصَلِهَا قَالَ أَتَسْتَبْدِلُونَ  
النَّبِيَّ هُوَ أَحَدِي نَرَى ابْهَلًا طُورًا مِصْرًا فَإِنَّ لَكُمْ مَّا سَأَلْتُمْ وَ ضُرِبَتْ  
عَلَيْهِمْ لِلدَّلِيلِ غَضَابَةٌ مِّنَ اللَّهِ ذَلِكَ بِأَنَّهُمْ كَانُوا يَكْفُرُونَ بِآيَاتِ  
وَ يَقْتُلُونَ النَّبِيِّينَ بِغَيْرِ الْحَقِّ مَلَأْنَا صُدُورَهُمْ وَ كَانُوا يَعْتَدُونَ )

صدق الله العظيم

سورة البقرة الآية 61

# DEDICATION

*To the soul of my father*

*To my mother*

*To my brothers*

*To my sisters & my friends*

*With love*

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## ABSTRACT

This study was conducted to compare between quality of oil produced from Pumpkin and sunflower seeds and the effect of frying on physicochemical characteristics of oils. Samples of pumpkin and sunflower seeds were collected from Bahri market and the extraction of oils by mechanical presses was in Um durman market .All the steps of refining were carried out at laboratory in college of agricultural studies Sudan University, seeds were subjected to proximate analyses of seeds and for oils physicochemical analyses before and after frying process. The oils were reused for frying three days consecutively .After each frying process, oil was taken daily after cooling for analyses. The oil content 33%, moisture 5.17, protein 29.50, crude fiber 19.07, and ash 4.59 for pumpkin seeds and oil content 37%, moisture 4.04%, protein 26.12%, crude fiber 19.07% and ash 4.69% for sunflower seeds, respectively. The values obtained for physical properties of pumpkin seeds oil were for density 0.94, viscosity 38 , refractive index, 1.47 and for yellow, color 71, red color 8.10 . Physical properties of sunflower seeds oil were for density 0.89, viscosity 31.50, refractive index 1.47 ,yellow color 51, red color 2.50 ,respectively .The chemical properties of pumpkin seeds oil include acid value 0.27 , peroxide value 2.30 and Saponification number, 240.50 .Chemical properties of sunflower seeds oil acid

value 0.24, peroxide value 2.25 and saponification number 189.90, respectively. The fatty acid composition were determined as Palmitic acid 17.51, linoleic acid 17.77, Linolenic acid 49.31, oleic acid 7.95 and other acids 7.46% for pumpkin seeds oil. And Palmitic acid 11.10, linoleic acid 32.32, Linolenic acid 46.33, oleic acid 6.18 and other acids 4.07% for sunflower seeds oil, respectively. The density did not increase for both oils (0.95-0.95 in pumpkin and 0.88-0.89 in sunflower), and viscosity increased from 42 to 44 in pumpkin oil and 35 to 40 in sunflower oil. Also refractive index for both oils did not increase. The yellow color increased from 70 to 73, red color from 9 to 10.10 in pumpkin oil and yellow color 47 to 51, red color from 4.30 to 6.20 in sunflower oil. The changes in chemical properties of both oils were the acid value for both oils did not increase (0.27-0.34 in pumpkin oil and 0.24-0.34 in sunflower oil) and peroxide value is unstable during frying but it is acceptable because it is within the acceptable range (not more than 10 m.Eq/kg), and saponification number increased from 229.75 to 236.30 in pumpkin oil and 179.50 to 236.40 in sunflower oil.

## المخلص

أُجريت هذه الدراسة لمقارنة الزيت المستخلص من بذور القرع وزهرة الشمس واثق القلي (التحمير) علي الخصائص الفيزيوكيميائية للزيتين .

تم الحصول علي البذور من سوق بحري وتم العصر في معصرة ميكانيكية بسوق ام درمان وأجريت كل عمليات التكرير في المعمل ثم أخضعت العينات للتحليل التقريبي والتحليل الفيزيوكيميائية ومن ثم استعملت الزيوت لتحمير شرائح البطاطس لثلاث مرات بمعدل مرة كل يوم , ومن ثم تم سحب عينة بعد كل تحمير و برد الزيت واجريت التحاليل الفيزيوكيميائية عليها .

وجد أن التحليل التقريبي لبذور القرع وزهرة الشمس هي : الزيت 33% , الرطوبة 5.17%، البروتين 29.50%، الألياف 19.07% والرماد 4.59% لبذور القرع . و نسبة الزيت 37%، الرطوبة 4.04% , البروتين 26.12%، الألياف 19.07% والرماد 4.69% لبذور زهرة الشمس . وأوضحت نتائج الخصائص الفيزيائية لكل من بذور القرع وزهرة الشمس أن الكثافة 0.94 , اللدوجة 38 , معامل الإنكسار 1.47 واللون الأصفر 71, اللون الأحمر 8.10 لزيت القرع . والكثافة 0.89 , اللدوجة 31, معامل الإنكسار 1.47, اللون الأصفر 51, اللون الأحمر 2.50 لزيت زهرة الشمس .

أما الخصائص الكيميائية فكانت القيم كالتأتى :الرقم الحمضي 0.27 ، رقم البيروكسيد 2.30 mEq/kg و رقم التصبن 240 لزيت القرع .الرقم الحمضي 0.24 ، رقم البيروكسيد 2.25 و رقم التصبن 189 لزيت زهرة الشمس .

أيضاً وجد أن نسب الأحماض الدهنية لزيت القرع كانت: حمض البالميتيك 17.51 %، لينوليك 17.77 %، لينولنيك 49.31 %، الأوليك 7.95 % ونسبة بسيطة من الأحماض الأخرى (7.46 %). كذلك تم التعرف على نفس الأحماض الدهنية لزيت زهرة الشمس وكانت البالميتيك 11.10 %، لينوليك 32.32 %، اللينولنيك 46.33 %، الأوليك 6.18 % و نسبة بسيطة من الأحماض الأخرى (4.07 %).

من الملاحظ أن الكثافة لم تتغير في كلا الزيتين . أما اللزوجة فقد زادت من 42 إلى 44.50 لزيت القرع ، ومن 35 إلى 40 لزيت زهرة الشمس ، ومعامل الانكسار لم يتغير في كلا الزيتين ، زاد اللون الأصفر من 70 إلى 73.20 واللون الأحمر من 9 إلى 10.10 لزيت القرع. وفي زهرة الشمس زاد اللون الأصفر من 47 إلى 51 اللون و الأصفر من 4.30 الي 6.20 ، والرقم الحمضي من 0.33 الي 0.34 لزيت القرع ، ومن 0.24 الي 0.34 لزيت زهرة الشمس. رقم البيروكسيد لم يكن ثابتاً أثناء عملية التحمير إلا ان نسبته فى الحدود المقبولة (ليس اكثر من 10 m.Eq/kg). رقم التصبن إزداد من 229.75 إلى 236.30 لزيت القرع ، ومن 179.50 إلى 236.30 لزيت زهرة الشمس.

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