

الآية

قال تعالى

وَسَى لَنُفٍ أَنْصَبْنَاهُ عَلَيْكُمْ يُطْغَمُ وَاَحِدٍ فَادْعُ لِنَارِ بَكَ يُخْرِجُ لَنَا مِمَّا تُذْذِبُ الْأَرْضُ مِنْ
سَائِبَاتِهَا وَفُومِهَا وَعَدَسِهَا وَبَصَلِهَا قَالَ أَتَسْتَبْدِلُونَ الَّذِي هُوَ بِالَّذِي هُوَ خَيْرٌ أَهْبِطُوا
سَاءَلْتُمْ وَصَفَرًا فَيَبِئْسَ لَكُمُ الدَّالَّةُ وَالْمَسْكُونَةُ وَبَاءُوا بِغَضَبٍ مِنَ اللَّهِ ذَلِكُمْ كَانُوا
نَ بآيَاتِ اللَّهِ وَيَقْتُلُونَ الذَّبِيَّيْنَ بغيرِ الخلقِ مَذَالِعَصَوًا وَكَانُوا يَعْتَدُونَ).

صدق الله العظيم

سوره البقره الآية 61

Dedication

To The soul of my faTher

To my moTher

To my broTher

To my sisTer

to my fiancé

With Love

ACKNOWLEDGEMENTS

Thanks at the beginning and at last are for ALLAH the gracious, and the great for helping me going through and finishing this work I am deeply indebted to my supervisor **Dr. Salma Elghali Mustafa**, for her patience, continual encouragement and help throughout this work. Thanks also extended to my brothers for their encouragement during the work. Also thanks for all members of laboratories in the department of food science and technology (Algily, Nawal). Food Research Center (Safa), Oil Arabic Company and Central Laboratory University of Khartoum.

ABSTRACT

This study was conducted to extract oil from pumpkin seeds and determine physicochemical characteristics of the pumpkin seeds oil. Pumpkin seeds were purchased from central market in Khartoum North. The extraction of oil was conducted by solvent extraction using petroleum ether. Pumpkin seeds were subjected to proximate analysis. Moreover, the extracted oil was analyzed for physicochemical properties. The results for the proximate analysis were 38%, 6.25%, 24.6%, 2.76%, and 4.64% for fat content, moisture, protein, fiber and ash; respectively. The values obtained by determine physical properties of pumpkin seeds oil were 0.94, 48.9, 1.47 cPs, 70 and 11 for density, viscosity, refractive index, yellow color and red color; respectively. The results for the chemical properties of pumpkin seeds oil were 1.403 (mg KOH/ g oil), 6.88(meq O₂/kg oil), 0.701%, 191.68 (mg KOH/ g oil) and 104.36(g of I₂/100 g oil) for acid value, peroxide value, free fatty acid as oleic, saponification number and iodine value; respectively. The findings from this study revealed that pumpkin seed can be good source of edible oil.

ملخص الاطروحة

أجريت هذه الدراسة لاستخلاص الزيت من بذور القرع وتقدير الخصائص الفيزيوكيميائية له. تم شراء البذور من السوق المركزي بالخرطوم بحري، إستخلص الزيت باستخدام طريقة الإستخلاص بالمذيبات.

وكانت نتائج التحليل التقريبي لبذور القرع هي (38%، 6.25%، 24.6%، 2.76% 4.64%) لكل من الدهن ، الرطوبة ، البروتين ، الألياف والرماد علي التوالي. وكانت نتائج تقدير الخصائص الفيزيائية (الكثافة ، اللزوجة واللون الأصفر ، واللون الأحمر) لزيت بذور القرع كالآتي 0.94، 48.9، 70، 11 علي التوالي.

اما نتائج تقدير الخصائص الكيميائية فكانت كالآتي (1.403، 6.88، 0.701، 191.68 و 104.36) للرقم الحمضي ، رقم البيروكسيد ، ومحتوي الأحماض الدهنية كحمض اوليك ورقم التصبن والرقم اليودي علي التوالي.

ومن هذه الدراسة يمكن ان نخلص الي امكانية استخدام بذور القرع كمصدر لانتاج زيت بمواصفات عاليه الجودة.

List of contents

Title	Page No
الاية	I
Dedication	II
ACKNOWLEDGEMENT	III
ABSTRACT	IV
ملخص الاطروحة	V
List of contents	VI
List of tables	Viii
CHAPTER ONE	
INTRODUCTION	2
CHAPTER TWO	
LITERTURE REVIEW	
2.1 Back ground of pumpkin	3
2.2 Uses of pumpkin seeds	3
2.3 Nutritional value of pumpkin seeds	4
2.4 Proximate analysis of the pumpkin seed	5
2. 4.1 Oil content of pumpkin seeds	5
2.4.2 Moisture content of pumpkin seeds	5
2.4.3 Protein content of pumpkin seeds	5
2.4.4 Crude fiber	5
2.4.5 Ash content of pumpkin seed	5
2.5 Physical characteristics of pumpkin oil	6
2.5.1 Density	6
2.5.2 Viscosity	6
2.5.3 Refractive Index	6
2.5.4 Color	6
2.6 Chemical characteristics of Pumpkin seed oil	7
2.6.1 Acid value	7
2.6.2 Free fatty acid content	7
2.6.3 Peroxide value	7
2.6.4 Saponification value	7
2.6.5 Iodine value	7
2. 7 Methods of oil extraction from oil seeds	8
CHAPTER THREE	
MATERIALS AND METHODS	
3.1 Materials	8
3.1.1 Chemicals and reagents	8
3.2 Methodology	8
3.2.1 Sample preparation and oil extraction	8
3.2.2 A proximate analysis of pumpkin seeds	10

3.2.2.1 Determination of moisture content	10
3.2.2.2 Determination of oil content of pumpkin seeds	10
3.2.2.3 Determination of Crude protein of pumpkin seeds	11
3.2.2.4 Determination of Crude fiber of pumpkin seeds	13
3.2.2.5 Determination of Ash content of pumpkin seeds	13
3.2.3 Physical analysis of oils	14
3.2.3.1 Density	14
3.2.3.2 Viscosity	15
3.2.3.3 Refractive index	15
3.2.3.4 Color	16
3.2.4 Chemical analysis of oils	16
3.2.4.1 Free fatty acids	16
3.2.4.2 Peroxide value	17
3.2.4.3 Saponification value	17
3.2.4.4 Iodine value	18
3.3. Statistical analysis	19
CHAPTER FOUR	
RESULTS AND DISCUSSION	
4.1 Chemical composition of dried pumpkin seeds	20
4.2 Physical characteristics of the pumpkin seed oil	23
4.3 chemical characteristics of pumpkin seed oil	25
CHAPTER FIVE	
CONCLUSION AND RECOMMENDATION	
5.1 Conclusion	28
5.2 Recommendations	28
REFERENCES	29

List of Tables

Table No	Title	Page No
(1)	Proximate composition of pumpkin seed	22
(2)	Physical properties of pumpkin seeds oil.	24
(3)	Chemical characteristic of pumpkin seeds oil	27