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**DETERMINATION OF EFFECTS OF REUSING FAT IN DEEP-  
FRYING SWEET POTATO CHIPS**

**BY**

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**A PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF CHEMISTRY IN  
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## **DECLARATION**

I MALINGA ROGERS declare that this research project report is my own original work unless otherwise cited, and where such has been the case reference has been stated and that the same work has not been submitted for any award in any other university or other tertiary institute of higher education.

Signature.....

Date.....

## **APPROVAL**

This dissertation has been submitted for examination with approval of my supervisor.

Mr. MUSAGALA PETER

Signature.....

Date.....

## **DEDICATION**

I dedicate this research to my dear parents Mr. Higenyi Augustine the late and more so Mrs. Khakasa Jenifer for her entire effort to support me materially through daring to pay all the necessary school fees throughout my academics and to all my dearest family members likes of Nyengo Richard, Handehe Ketty, Higenyi Paul and Were Joshua for sincere support, guidance and counseling granted, to all my colleagues in the academic struggle and finally to all friends, relatives and my dearest daughter Nakone Vivian.

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## LIST OF ACRONYMS

- (i) **WHO:** World Health Organization
- (ii) **MOH:** Ministry Of Health.
- (iii) **AOCS:** American Oil's Chemists Society
- (iv) **RCO:** Repeatedly heating Cooking Oil
- (v) **PAH:** Polycyclic Aromatic Hydrocarbons
- (vi) **Exp't:** Experiment
- (vii) **UNBOS:** Uganda National Bureau of Statistics

## ABSTRACT

The repeatedly heating of fat in preparation of deep fried food sweet potato chips has become a main dietary habit among Nagongerians and citizens of Uganda which can cause health impacts on humans. In this study, mass of the extracted fat was obtained in grams using electro-analytical balance and the percentage by weight of the extracted fat sample was generated depending on total mass of ground chips used and mass of fat extracted. The high values of AV and PV indicated the bad quality of fat during third cycle of repeated heating of fat. Therefore, according to generated data with high values of PV and AV legally witnesses how bad and harmful repeated heating of fat is to our life. The obtained data concerning methods of characterizing fat in this study were analyzed using Microsoft excel version 2013 and in this process, correlation method of analysis was rather used to examine the comparisons between the sessions of deep-fat frying i.e. the correlation value obtained for the first session of deep frying gave a significant high positive correlation indicating good fat quality for usage rather than the third cycle of deep frying which gave a high negative correlation hence recommended bad fat quality for usage. A basis was made to abolish this practice of reusing heated fat during cooking/frying in our communities.

**Keywords:** Repeatedly heated fat, health impacts, correlation method and deep-frying.



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# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 BACKGROUND

Fat is defined as one of the type of lipids occurring naturally as a mixture of triglyceride (triacylglycerol) that is, tri-esters of glycerol with three long-chain fatty acid molecules. Fats differ from other classes of naturally occurring biomolecules (carbohydrates, proteins, and Nucleic acids) in that they are more soluble in nonpolar solvents to weakly polar solvents (diethyl ether, hexane, dichloromethane, and dipropyl ether (petroleum ether)) than they are in water (Francis, 2003).

Fat is an important part of diet humans feed on. It provides energy, absorbs certain nutrients and maintains human core body temperature. The human body need to consume fat every day but at a limited level of <10 g to support these functions work, rather some fats are better for the body with exception of saturated and Trans fats. These bad fats have been blamed guilty of causing weight gain, clogged arteries and an increased risk of certain deadly diseases (Anne & Melodie, 2018 december 12).

The consumption of deep-fried potato chips spontaneously continues to increase in Uganda and in other parts of the world (Anne & Melodie, 2018 december 12). However, deep frying is so common practice in preparation and production of food stuffs (snacks) by some companies that is, can import or export the preserved and packaged snacks in different parts of the world because of their easy affordability and accessibility. Therefore, there is a high demand for the consumption of these deep-fried food stuffs (Ganesan, et al., 2019).

In this study, various researchers researched out vital data of great importance to the country and to the whole world. In Kampala, the central business district and capital city of Uganda there is an area of population with an approximated 1.53million people in mid-2009 growing by3.9% annually (UBOS & :, 2009). Almost all people in the city are surviving on a vast array of ready-

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