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A REVIEW PAPER ON ANALYSIS OF PHYSICOCHEMICAL PROPERTIES OF OILS FROM THE SEED OILS.

BY

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A RESEARCH REVIEW PROJECT REPORT SUBMITTED TO THE DEPARTMENT OF CHEMISTRY IN PATIAL FULFILMENT FOR THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF SCIENCE AND EDUCATION DEGREE OF BUSITEMA UNIVERSITY.

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DECLARATION

I AKETCH ROSEMARY declare that this research reviewis entirely my original work and has not been published or submitted before to any university or higher institution of learning for award of degree.

AKETCH ROSEMARY

Sign.....Date.....

APPROVAL

This research review has been done under my supervision and guidance.

Supervisor; DR OWOR RICHARD ORIKO

Sign.....Date.....

DEDICATION

This research review is dedicated to my dear parents : my father mr owino alex and my mother nyafwono hellen, my beloved brothers and sisters and the entire family of mr ochieng aloysious.

Special thanks go to my father , aunts and friends for their financial and mentor support all through my bachelors academic journey. Above all I thank the almighty God who has been and still guiding me through the journey of my education.

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May God reward them abundantly?

ABSTRACT

Oils constitute one of the essential components of balanced diet as good source of energy. The chemical and physical properties of oils are amongst the most important properties that determine the quality and help to describe the present condition of oils. Lipid oxidation has harmful effects on both food quality and human health. Then efforts must be made to minimize oxidation and improve oxidative stability of lipid products. The reactions during the frying/cooking process and storage conditions depend on factors such as the original quality of the oil, type of oil, concentration of antioxidants and oxygen. Edible oil, being obtained from vegetable sources, is primarily composed of fatty acids and used for cooking, medicinal and cosmetic purposes. It is estimated that about 90% of vegetable oils are used for edible purposes.

Different authors discussed various techniques such as mechanical extraction, solvent extraction, traditional extraction and super critical fluid extraction which they used to obtain the oil from the seeds. The solvent extraction has become the most popular method of extraction of oil because of its high percentage of oil recovery from seeds. Solvent extraction bridges the gap between mechanical extraction which produces oil with high turbidity metal and water content and supercritical fluid extraction which is very expensive to build and maintain its facilities.

There is need for people of Uganda and across the world to increase the growth and production of oil nuts. These is because nut oils have got uncountable applications in daily life such as consumption of raw nuts, cooking oil , food industry, cosmetics , detergent industries as well as animal feeding. Further more people should adopt the simple and traditional method of oil extraction as these will increase production of more oil to solve the current crisis in our country.

Keywords: Physicochemical properties, nuts, oils, Uganda

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1.0 INTRODUCTION

1.1 background

Seeds and nuts are important sources of oil and they are commercially available.

The term oil is generally used to describe all substances that are oily fluid or greasy at room temperature .Wholly fats are known as extracted triglycerides/lipids that are liquid under the same condition. (A.A, 2005). Oils and fats fall in a larger group of naturally occurring substances called lipids. lipids have found increasing demand in commercial frying applications because they act as convenient means of vigorous heat transfer (Andrew . C. Buba. a.a, 2012). Oils and fats are non-volatile substance which are soluble in organic solvents but insoluble in water. They makeup along with carbohydrates and proteins the main food stuffs and they are abundantly available in nature.

oils and fats are chemical products of the reaction between three molecules of fatty acids and triol (glycerol) through esterification reaction.Oils/fats are naturally obtained from two sources that is; animal and vegetable sources .Animal oil sand fat are extracted both from marine and terrestrial animals. Marine fats mainly got from the liver oils.

Terrestrial fats and oils are extracted from animals and they are lard (from Swine), suet (from oxen or sheep), ghee (from cow or buffalo milk) and many others. Vegetable oil is got abundantly in fruits and seeds. Oils extracted from

plant source are called vegetable oils. These are; palm oil, cotton seed oil, ground oil, sunflower oil and many others.Edible oils extracted from plant sources are of use in several food applications and industries. Fats and oils constitute the characteristic flavors' and textures to foods as summed up diet components (Odoemelam, 2005) and they can also be used as a source of oleo chemicals (morrison, 1995) Vegetable oils has contributed greatly to the diet in many countries, being used as an important source of protein, lipid and fatty acids. They are important in human nutrition as well as repair of worn-out tissues, including the formation of new including being useful source of energy (Gaydon, 1983) , (Grosso, 2013),. (Grosso N. G., 1999). (Aremu, 2014)(Grosso N. D., 1997) Oilseed crops are the main sources of lipids majorly used for human nutrition including several industrial purposes. They are described as those seeds that contain preferably large quantity of oil. The major commonly encountered oilseeds (conventional

oil seeds) are groundnut, soybean, palm kernel, cotton seed, olive, sunflower seed, and many others (Ajala, 2014), (Akintayo, 2004)Adeyeye et al., 1999; Aremu et al.,2007).

world production of oil seeds has been in an increase over the last thirty

years (Murphy, 1994): This would appear to be related to the products and by-products as oils seeds are grown mainly for their oil and meal. Oil from vegetables is usually at a greater price per ton than the cake. This is due to fact that the demand for oil is always higher than that of the cake.

Nut and seed oils are being demanded because they are rich in the concentration of bioactive components of lipids that have shown several health benefits in many countries. Fats and oils, and their various lipid components can find multiple applications in the food as well as in cosmetics, pharmaceuticals, biodiesel paints and many others.

Oils extracted from edible nuts and oil seeds are utilized in the food industry much as there is increasing emphasis on industrial applications as feedstock for various industries with approximately 80% of the world production of vegetable oils mainly used for human consumption. The remaining 20% is used either for animal consumption or chemical industries.

a particular oilseed is able to satisfy the increasing industrial demand depends on its potential to be used for particular purpose, how much of it can be produced within the a required period, how much of it is available and ease of the processing technology.

In a generic sense, oils and fats extracted from seeds and nuts makeup an essential parts of man's diet. Fats and oil, in addition to proteins, carbohydrates, vitamins and minerals are the major essential nutrients needed by the human body. The main

Importance of the vegetable oils is within their food value. Vegetable oils extracted from plant seeds have been playing important roles in giving comfort in human lives in several ways. they are required for global nutritional demands and find applications in several food and other industrial purposes. (Idouraine, 1996)

For the last ten years,, there have been increasing concerns over vegetable oils as source of material in petroleum industries or mineral oil. The major reason for this concern is because of

the environmental matters that consider mineral oil as the main source of volatile organic components that themselves are the principle contributors of our present recalcitrant

Pollution problems worrying the ecology. Oilseeds have also found use in animal feed due to their high levels of proteins.

Their seeds are rich in energy for the sprouting embryo majorly as oils in comparison with the compared cereals that Store the energy in the form of starch . (Mckevith, 2005)

There is high demand for cooking oil in Uganda. However, most of the cooking oils used in Uganda are imported from other countries. These imported cooking oils always have high prices, hence few people can afford.
Diversifying the raw materials would increase the production of local cooking oils which would make the cooking oils available in the local market for the ever increasing population in Uganda.

Therefore the purpose of this review is to assess the physicochemical properties of seed oil available in Uganda

Studies have showed that several common sicknesses are related to specific fatty acids in a balanced ratio of the necessary diet
People who are eating healthy meals, one which contains fatty acids are known to have healthy skin and a better immune system. Hemp seed oil also gives an adequate supply of antioxidants (Vitamin E), carotene (precursor to Vitamin A), phytosterols, phospholipids and a number of minerals such as calcium, magnesium, sulfur, potassium, phosphorus, including the most required amounts of iron and zinc.

Proteins have got several functions in the human body that is to say; it acts as enzymes, antibodies, as well as the structural tissue composition, hormones including blood protein. The majoruseof dietary protein is to avail amino acids responsible for the maintenance and growth of body tissues. Certain types of oilseed have been grown to supply oil which is necessary for cooking and food processing which is termed as vegetable oil. This oil is utilized by the food industry and is now being processed extensively for use as bio-diesel (sarwar m. , 2009), (sarwar m. , plant spacing-a non-polluting tool for aphid management in canola, 2008), (sarwar m. , improving insets controlling on radish crop, 2005), (sarwar m. , improving insets controlling on radish crop, 2005) as medication including culinary spice being in use from Mustard seeds have

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