

# Production of Local Drying Oil from Agricultural Based Biomass for Industrial Usage

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## Abstract

This study is aimed at extracting and characterizing local available oils from edible and non-edible seeds, with the view of evaluating their chemical and physical characteristics. With the increasing demand for drying oil by industries added with high import duties from the regulatory agencies, this study is poised in giving detailed descriptions on the significance of these raw-materials that are essential in meeting domestic and industrial demands. These have placed a heavy strain on the foreign exchange position of Nigeria through Foreign Direct Investment (FDI). The demand for domestic sourced alternatives cannot be over described. The availability of local sourced oils will definitely advance local industries and get ride of high costs of import duties thereby increasing the Gross Domestic Product of Nigeria through economic empowerment in the area of job creation. The drying and semi drying properties of: Huracrepitan oil, Soybean, orange seed, luffa seed oil and crude palm kernel oils were analyzed in the study. The iodine values for Huracrepitan, Soybean, orange seed, luffa seed oil and crude palm kernel oils were: 170.1, 130.6.60, 70.10, 35.80 and 22.37 respectively. From experimental results, HuraCrepitan oil has the highest iodine value among the oils evaluated while palm kernel oil gives the least value. Local paint industries and other allied have been solely depending on linseed and tung oils for drying oil. This study revealed the possibility of producing drying oils from *Huracrepitan oil* and that can be substituted for the imported linseed oil.

Keywords: Drying Oil, HuraCrepitan. Iodine Value, Semi-Drying Oil, Soya Bean Oil.

## 1.0 INTRODUCTION

Dry oil are liquid substances that have been subjected to efflorescent due to their unique properties components in converting Oxygen to dry, hard, insoluble and resinous film as opined by National Energy Education [5] report. More so, the oil also have partial or wholly synthetic substances that have a glyceride structure on a wide varieties of other type of structures energy [4]. An example of partial synthetic drying oil is that from castor seeds 40 [6]. This oil dried from the action of glyceride made by chemical dehydration to form more Olefine as posited by . Unsaturated—hydrocarbon polymers such as polybutadiene are major instances of total synthetic drying oils of the non—glyceride origin etc [4].

The hydrolyzed oil from castor seed can further be converted to dehydrated fatty Acid by hydrolysis and distillation [6].

The drying oil are majorly vegetable oil that are comprises of glycerol esters in the form of triglycerides of both saturated and unsaturated carboxylic acids that appears in group form. The properties and characteristics of these oil are based on the individual carboxylic acids distributions oils [11,12].

- Danjumma M. N and Dandago, M. A. (2010), extraction and characterization of calabash (*lagentinasiceratia*) seed oil, *Techno Science Africa Journal* 3(1), 233 – 246.
- Rameshkumar K.B. Hisham A. and Latha P.G., (2011) Chemistry and Therapeutic Potential of Chaulmoogra Oil, Recent progress in medicinal plant, volume 3 Vol. 33,340-356.
- InamUllah Khan, ZhenhuaYan and Jun Chen, (2019), Transesterification and Analytical Study of Rhustyphina Non-Edible Seed Oil as Biodiesel Production Energies, 12, 4290.
- DebashisSut, Rahul Singh Chutia, NeonjyotiBordoloi, Rumi Narzari, RupamKataki ,(2016),Complete utilization of non-edible oil seeds of *Cascabelathevetia* through a cascade of approaches for biofuel and by-products, *Bioresource Technology* 2(66), 1-10.
- Mustapha AB\*, Ekanem EO, Kolo AM, (2018) Comparative Evaluation of *Luffaaegyptiaca* Seed Oil as Insulating Oil in the Nigerian Power Sector, *Chemistry Research Journal*, 3(2):42-48
- Ottih,O. P., Ven Prof N. AG Aneke and Engr. pCEjikeme, (2015), production and characterization of paint Driers from sand box seed oil (*Huracrepitans*), *International Journal of Innovative Science, Engineering and Technology*, volumes issue, 71 -76. Ottih,O. P., Ven Prof N. AG Aneke and Engr. pCEjikeme, (2015), production and characterization of paint Driers from sand box seed oil (*Huracrepitans*), *International Journal of Innovative Science, Engineering and Technology*, volumes issue, 71 -76.
- Kumar Ashok, **Jess Vergis**,P. Gokulakrishnan,R. & K. Agarwal (2015). Essential Oils as Natural Food Antimicrobial Agents:Critical Reviews in Food Science and Nutrition Volume 55, (10) , 56-68.
- Chinweuba A. J and Chendo MN, (2017), Extraction, characterization and industrial Applications of *SesamumIndicum* seed oil, *modern Chemistry and Application*, 5(2) 1000216.
- Dar. M. A (2011), A review plant extracts and oil as corrosion inhibitor in aggressive media. *Industrial lubricant Tribology* (63), 227-223.
- Lahhit, N, Bolyanzer, A., Desjobea, J. M. Hammouti, B., Salgli R., Costa, J. Jama, C. Bentic, F. J magidi, lig (2011), *foeniculumVulger* essential oil as green corrosion inhibitor of carbon steel in hydrochloric acid solution, *Portugal Electronic Acta* 29, 1276-138.
- Ogunbizi M, A. Ogunyemi, I. O. yussuf, A. O. (2014), the use and Modification of different Vegetable oils for Anticorrosion paint, *Advance in agriculture and Biology* , 2 (4), 186- 191.
- Odunlami S. A & Ramonu O. J (2017). Design and Fabrication of an Extracting Machine for Small-Scale Production of Local Coconut: *Imperial Journal of Interdisciplinary Research (IJIR)*. Vol 3, Issue 9, 2017
- Ogala, H, Elinge C.M, Wawata I. G, Adegoke, A.I. Muhammade, A. B.&Ige, A. R. (2018) Extraction and physiochemical analysis of Desert Date (*Balanite AE Gy.Ptinca*) Seed oil, *International Journal of Advanced Research/Science, Technology & Engineering* 4(\$\$) 2488-9849.
- Ogunbizi M, A. Ogunyemi, I. O. yussuf, A. O. (2014), the use and Modification of different Vegetable oils for Anticorrosion paint, *Advance in agriculture and Biology* , 2 (4), 186- 191.
- Oluba, OM, Y R Ogunlowo, G.C Ojeh, K.E Adebisi, G.O.Eidangbe and I.O Isiosio,2008.Physiochemical properties and fatty acid composition of *Citrulluslanatus*(Egusi Melon)seed Oil. *J.Biol.Sci.*,8:814-817
- Nwobi,B.E., Ofoegbu and O.B.Adesina,2006.Extraction and qualitative assesement of African sweet orange seed oil. *Afr.J.Food Agric.Nutr.Dev.*,6:1-11
- Kyari,M.Z.,2008.Extraction and Characterization of seed oils.*Int.Agrophys.*,22:139-142
- Akubugwo,I.E. and A.E.Ubogu,2007.Physiochemical studies on Oils from five selected Nigerian Plant seeds.*Pak.J.NUtr.*,6;75-78