SPECTROSCOPIC AND PHYSICOCHEMICAL CHARACTERIZATION OF *Plukenetia conophora* OIL

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ABSTRACT

The spectroscopic studies revealed that ***Plukenetia conophora*** oil is an unsaturated oil having linolenic acid as the predominant fatty acid, the elemental analysis (C = 77.75% carbon, 10.95% hydrogen and 11.18% oxygen) corresponds with the calculated (78.39% carbon, 10.62% hydrogen, and 10.99% oxygen). The proton NMR revealed characteristic peaks at δ = 2.7- 2.8ppm for =CCH2C=, 3.9-4.3ppm for -OCH2CHOCH2O (glycemic group), 5.1-5.5ppm for - CH=C and so on. Physicochemical analyses that were carried out on the oil were organoleptic analysis, specific gravity, moisture content, smoke point, acid value, saponification value, ester value, peroxide value, iodine value, and free fatty acid value. The physicochemical report revealed that the oil is light- yellow in colour with a nutty smell, has smoke point of 240oC, specific gravity of 0.917g/cm3 which makes it less dense than water, refractive index (at 29oC) of 1.42 and moisture content (%) of 0.49 ± 0.028 which shows that it can be preserved for a long time. The iodine value characterization of the oil (5.63g/100g) suggests that it is non-drying oil suitable for paint making and that it is less susceptible to oxidation. The saponification value (162.02 ± 0.042 mgKOH/g) obtained suggests that it can be used in saponification industries such as soap making industry, the free fatty acid value (3.12 ± 0.014) gotten as oleic acid suggests that it is good for consumption, and the acid value obtained for the oil was 28.08 ± 0.042mgKOH/g. The peroxide value (1.04 Meq/kg) suggests less susceptibility of the oil to oxidation and its stability and ester value(101.36 ± 0.283mgKOHg-1) gotten for the oil falls between the range of oils good for consumption.