^{13}C NMR AND ^{1}H NMR spectroscopic analysis of Adansonia digitata, Albizia lebbeck and Daniellia oliveri oils

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The application of ^{13}C nuclear magnetic resonance (NMR) spectroscopic in quantitative analysis of the fatty acid composition of vegetable oils and fats has been developed. Recently it has been shown that, in triglycerides of vegetable oils, the nature of the fatty acids (whether saturated, monoene or diene), attached to the 1,3 − and 2 − glycerol carbons can be distinguished by the ^{13}C NMR spectrum of the carbonyl carbons of the fatty acids. It has also been shown that the fatty acid composition of palm oil in terms of mole fractions of saturated, oleic and linoleic can be obtained experimentally by 13NMR and analysis. In this work, three different vegetable oils of *Adansonia digitata, Albizia lebbeck* and *Daniellia oliveri* were studied using 13C NMR and 1H NMR. The gated decoupled high resolution 13C NMR spectra revealed the presence of both saturated and unsaturated triacylglycerides in the oil samples, however with higher percentage of unsaturation in *Albizia lebbeck* seed oil. The peaks at 0.7 to 0.9 ppm which correspond to the terminal methyl groups in the fatty acid and that at 1.2 to 1.3 ppm are more intense and bigger in Daniellia oliveri which show that it is more saturated than Adansonia digitata and *Albizia lebbeck* oils. The results obtained by ^{13}C NMR and 1H NMR compared favorably with those obtained by gas chromatographic analysis.

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