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GC-MS Characterisation and Antioxidant Properties of Partially Purified Ethanol Extract of *Nuclea latifolia* (African peach) Stem Bark

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Abstract

Plant derived natural products such as flavonoids, terpenoids, carbohydrates, tannins, saponins, steroids, proteins, amino acids. *Nuclea latifolia* has been reported to have certain medicinal properties in traditional settings for healing of wounds, stomach disturbance and as antidiabetic agent. The study was aimed at characterizing the extract using gas chromatography-mass spectrometry (GC-MS) to determine the different compounds present and to partially purify the extract using column chromatography and the determination of the antioxidant properties of the resultant fractions. Extraction was carried out using absolute ethanol in the ratio 1:5w/v for exactly 48hrs and elution of the extract was done with solvent combinations in order of increasing polarity, beginning from chloroform, ethyl acetate, methanol and finally water. While GC-MS analysis of the extract was carried out using a Perkin Elmer Turbo Mass Spectrophotometer (Norwalk CTO6859). The *in vitro* antioxidant activity, total flavonoid and total phenolic contents of seven (7) fractions of the ethanol extract of *Nuclea latifolia* stem bark was determined. Results of the experiments showed that the antioxidant activity in mg/ml was within the range of 50±2.52 to 95±1.16 $^{mg}/_{ml}$. The total flavonoid concentrations varied from 100±2.00 to 190±2.65 $^{mg}/_{ml}$ of quercetin equivalent (QE). The total phenolic content ranged from 154±2.65 to 330±3.61 $^{mg}/_{ml}$ of gallic acid equivalents (GAE). *N. latifolia* water fraction showed the highest antioxidant activity and total flavonoid content while the chloroform fraction has the highest total polyphenolic content. The extract of N. latifolia stem bark exhibited strong positive correlation between the total antioxidant capacity, total flavonoids and total phenolic content (especially the methanol: water fraction). GC-MS analysis revealed the presence of lipids, their esters and phenolic compounds. Hence, the plant has potential for both pharmaceutical and industrial applications. This also gives an insight into the fraction of the extract that possessed the desired therapeutic potentials for further exploitation in drug development and even better herbal practice.

Keywords: Antioxidant, characterisation, Nuclea Latifolia, Partial Purification, Phenolics

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