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Proximate composition, colour of seeds, chemical compounds of seed oils of *Vitex doniana*, *Ricinodendron heudelotii* and *Cleome gynandra*: Implications for human nutrition and industrial applications

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ABSTRACT

Objective: *Vitex doniana* (Black plum), *Ricinodendron heudelotii* (African nut tree) and *Cleome gynandra* (Spider plant) are three common wild plant species in Benin. In this study, the proximate composition, colour of their seeds and volatile compounds of derived oils were assessed in order to explore their usefulness and possible applications of their oils.

Methodology and results: Proximate composition and colour of the seeds, chemical compounds and quality index of seed oils were analysed using standard methods. Their seeds protein and lipid content ranged respectively from 25.58 g/100 g dw to 33.52 g/100 g and from 22.26 g/100 g dw to 44.39 g/100 g dw. The unsaturated fatty acids found in the oils are petroselinic acid (39.09%) and conjugated linoleic acid (12.57%) for *V. doniana* oil, oleic acid (44.75%) and linoleic acid (15.99%) for *C. gynandra* oil and oleic acid (16.63%) in *R. heudelotii* oil. Additionally, *R. heudelotii* oil contained a high level of β -sitosterol (24.39%).

Conclusion and application of the findings: The above results along with previous research suggest that the oils extracted from *R. heudelotii*, *V. doniana*, and *C. gynandra* are rich in a variety of bioactive compounds and may have potential applications in cosmetics, food, and pharmaceutical industries. *R. heudelotii*, *V. doniana* and *C. gynandra* kernels are rich in protein, lipids and fibre. These nutrients are essential for human health and could be used to improve the nutritional value of food products. Particularly, the protein from *R. heudelotii* kernels could be used as a food supplement. *V. doniana* and *C. gynandra* are non-drying oils and consequently could be used as ingredient in processed food products and in skincare products. *R. heudelotii* kernels oil is a drying oil and then could be used as vehicles in paints, varnishes, and printing inks. Additionally, *R. heudelotii* could be used in salad dressing according to its fatty acid composition.

Keywords: Benin, wild-seed oil, fatty acids, nutrition, industrial applications