



Chemical composition of oils of *Azadirachta indica* A. Juss and *Ricinus communis* Linn seed in Marigat, Baringo County, Kenya

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Abstract

All parts of *A. indica* (neem) and *R. communis* (castor) plants have mostly been used as natural remedies in the control and treatment of several ailments, control of pests and insects, animal feeds and production of industrial products globally. The seed oils of *A. indica* and *R. communis* are known to have antidiabetic, anti-helminthic, antifertility, antioxidant, antibacterial, anti-inflammatory, anti-cancer, insecticidal and mosquitocidal activity. This study reports for the first time the chemical composition of *A. indica* and *R. communis* seed oils from Marigat, Baringo County, Kenya. Seed oils of *A. indica* and *R. communis* were extracted from mature dried seeds through cold pressing and boiling respectively and chemical composition determined using Gas Chromatography (GC)-Mass Spectrometry (MS). The constituents of both seed oils were dominated by saturated and unsaturated fatty acids, cyclic esters and methyl esters. The predominant constituents of *R. communis* were (Z)-6-Octadecenoic acid (37.33%), Ricinoleic acid (30.22%) and 13-Hexyloxacyclotridec-10-en-2-one (26.67%) while those of *A. indica* were 2-hexyl-1-decanol (30.97%), Octadecanoic acid (29.69%) and Oxalic acid, 6-ethyloct-3-yl ethyl ester (15.55%). Oils contained Hexadecanoic acid and Octadecanoic acid which are used in the manufacture of several products such as candles, soaps, lotions, perfumes and cosmetics. Octadecenoic acid is important in control of human diseases and Ricinoleic acid in production of alkyd resins for surface coating and biofuel. From the results, *A. indica* and *R. communis* seed oils constituents have potential in the agricultural, industrial, cosmetics and pharmaceutical sectors but require further fractionation to isolate the bioactive compounds.

Keywords: *Azadirachta indica*; chemical constituents; GC-MS, *Ricinus communis*; seed oil

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Introduction

Natural seed oils from plants are in high demand for the development of new products in therapeutics, agriculture, cosmetics and industrial sector compared to synthetic products. Synthetic products have several limitations such as high cost, toxicity to non-targeted species, poor absorption, develop resistance, low bio-availability, pollutants to the environment and adverse side effects (Abdul et al., 2018). The use of plant-based products in therapeutics, agriculture, cosmetics and

industrial sector as alternative to synthetic-based products could be a better option because they are biodegradable, inexpensive, have less side effects and are readily available (Mkenda et al., 2015). Some of these seed oil plants are *Azadirachta indica* A., *Ricinus communis* L., *Celosia argentea* L., *Aesculus indica* C., *Sisymbrium irio* L., *Abies pindrow* R., *Ulmus wallichiana* P., *Nigella sativa*, *Cuminum cyminum* L., *Cassia abbreviate*, *Moringa oleifera* Z., *Annona squamosa* L. and *Pangium edule* R. which have been shown to