

## Original Article

Quality characteristics of *Ipomoea carnea ssp. fistulosa L* seed oil

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PMB 1144, Aliero, Nigeria.E-mail: [aliyuwarra@yahoo.com](mailto:aliyuwarra@yahoo.com)**Abstract**

Oil was extracted from the seed of *Ipomoea carnea ssp. fistulosa L*. The oil yield was  $19.23 \pm 0.07\%$  and the colour of the seed oil was dark green. The results of the physico-chemical analysis revealed the following: acid value, iodine value, saponification value and specific gravity of  $4.94 \pm 0.06$  mgKOH/g,  $105.54 \pm 0.70$  gI<sub>2</sub>/100g,  $203.08 \pm 0.70$  mg KOH/g and  $0.96 \pm 0.01$  respectively indicating the suitability of the seed oil for pharmaceutical and cosmetic applications.

**Keywords:***Ipomoea carnea*, seed oil, quality characteristics, cosmetics, pharmaceutical**1. Introduction**

*Ipomoea carnea ssp. fistulosa L.* is a wild plant which grow in dense populations along river beds, banks, canals and other wetland areas. Eventhough a report showed that the plant is a native of South America, ornamental uses and reproduction by seeds have aided the plant to disseminate into many regions, especially in terrestrial habitats [1]. Demography report showed that it was introduced to Egypt for ornamental purpose [2]. The plant belongs to family Convolvulaceae, screening of seed oils from four species of genus ipomoea was reported [3] It is commonly known as 'Morning glory' [4] In Hausa language it is called "Duman kada" and "crocodile gourd" in English [5] It was used in ancient system of medicine in many countries but not to great extent. The fact is that the plant had immense potential as an Anti-Inflammatory Activity, Antioxidant Activity, Antidiabetic Activity, Antimicrobial Activity, Wound Healing Activity, Immunomodulatory Activity, Cardiovascular Activity, Embryotoxic effect, Antifungal Activity, Hepatoprotective Activity, Inhibition Activity and Anxiolytic Properties [6]

*Ipomoea carnea* Jacq. has been identified as a useful material for several applications including medicinal purposes. Pharmaceutical efficacy of *Ipomoea carnea* was reported [7].

**2. Materials and Methods****2.1. Sample Collection and Identification**

The *Ipomoea carnea ssp. fistulosa L.* seed was obtained in the Month of November in the year 2013 from the premises of Kebbi State University of Science and Technology, Aliero, Nigeria. The

Figure 1. *Ipomoea carnea* plantFigure 2a. *Ipomoea carnea* seedsFigure 2b. *Ipomoea carnea* plant with dry seedsFigure 3. Hexane extract of *Ipomoea carnea* seed oil

taxonomic Identification was authenticated by Dr. Dhramendra Singh of the Botany unit Biological Sciences Department, Kebbi State University of Science and technology, Aliero in comparison with voucher specimen No.01 kept at Herbarium. The dried seeds were crushed into powder using mortar and pestle and were stored in a plastic container for oil extraction.

**2.2 Oil Extraction Procedure**

The hexane extract was obtained by complete extraction using the Soxhlet extractor (GG-17, SHUNIU). The 50 g of each powdered kernel sample was put into a porous thimble and placed in a Soxhlet extractor, using 150 cm<sup>3</sup> of n-hexane (with boiling point of 40- 60°C) as extracting solvent for 6 hours repeatedly until required quantity was obtained. The oil was obtained after evaporation using Water bath at 70°C to remove the excess solvent from the extracted oil. The oil was then stored in refrigerator for subsequent physicochemical analysis.

**2.3. Percentage Yield**

The oil which was recovered by complete distilling of most of the solvent on a heating mantle was transferred to a beaker. The beaker was then placed over water bath for complete evaporation of solvent for about 2 hours and volume of the oil was recorded and expressed as oil content (%) in line with literature report [8]

**2.4 Determination of specific gravity**

This was carried out in with literature report [9]

**2.4. Physico-Chemical Analysis**

The physico- chemical analysis of the *Ipomoea carnea* seed oil was carried out using the methods reported [10-12].

Table 1: Physio-Chemical analysis

Parameters	Values
Oil yield (%)	$19.23 \pm 0.07$
Colour	Dark green
Acid value mg KOH/g	$4.94 \pm 0.06$
Iodine value gI <sub>2</sub> /100g	$105.54 \pm 0.70$
Saponification value mgKOH/g	$203.08 \pm 0.70$
Specific gravity	$0.96 \pm 0.01$

Values are expressed as mean and  $\pm$  standard deviation of triplicate determinations

#### 4. Discussions

The colour of the oil was dark green, specific gravity was  $96 \pm 0.01$ , oil yield was  $19.23 \pm 0.07\%$  lower than  $26.15 \pm 3$  and  $142.27.50 \pm 5.721$  reported for oil from two varieties of *Cyperus esculentus* L. tubers [13] higher than 10.39, 7.84, 14.71 and 10.37 reported from the seed oils of four species of genus *ipomoea* [3] recommended for cosmetics and as alternate oil sources for various domestic and industrial applications. The acid value was  $4.94 \pm 0.06$  mgKOH/g lower than  $5.34 \pm 0.04$  mgKOH/g reported for *Demettia tripetala* fruit oil (Pepper fruit) [14] higher than  $1.20 \pm 0.065$  reported for *Jatropha* seed oil [15]  $0.35 \pm 0.01$  reported for canary melon seed oil [16] and  $0.03 \pm 0.01$  reported for onion seed oil [17] valuable for cosmetic preparations.

Iodine value was  $105.54 \pm 0.70$  gI<sub>2</sub>/100 g greater than 100 such seed oils are regarded as semi-drying. Oil having high iodine value (numbers) are polyunsaturated which indicates the degree of unsaturation. Saponification value was  $203.08 \pm 0.70$  mgKOH/g lower than and 213mgKOH/g for neem seed oil [18] higher than 136.32  $\pm 1.943$  reported for shea nut fat [19] suitable for soap production.

#### 5. Conclusion

Conclusively, the results of the physicochemical analysis of seed oil of *Ipomoea carnea* ssp. *fistulosa* L. indicated its potential for soap making and other cosmetic industries.

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