Research Journal of Pharmacology and Toxicology 01[04] 2015 www.asdpub.com/index.php/ript

Original Article

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

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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



Parameters

Oil yield (%)

Acid value mg KOH/g

Iodine value gI₂/100g

Colour

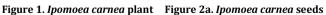
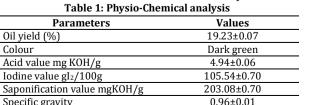




Figure 2b. Ipomoea carnea plant

with dry seeds



Specific gravity Values are expressed as mean and ± standard deviation of triplicate determinations

Abstract

Oil was extracted from the seed of Ipomoea carnea ssp. fistulosa L. The oil yield was 19.23±0.07% and the colour of the seed oil was dark green. The results of the physicochemical analysis revealed the following; acid value, iodine value, saponification value and specific gravity of 4.94±0.06 mgKOH/g,105.54±0.70 gI₂/100g, 203.08±0.70 mg KOH/g and 0.96±0.01 respectively indicating the suitability of the seed oil for pharmaceutical and cosmetic applications.

> taxanomic Identification was authenticated by Dr. Dhramemdra 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 cm³ 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].



Ipomoea carnea seed oil

4. Discussions

The colour of the oil was dark green , specific gravity was 96 ± 0.01 , oil yield was $19.23\pm0.07\%$ lower than 26.15 ± 3 and 142 27.50 ± 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 ± 0.06 mgKOH/g lower than 5.34 ± 0.04 mgKOH/g reported for *Demettia tripetala* fruit oil (Pepper fruit) [14] higher than 1.20 ± 0.065 reported for Jatropha seed oil [15] 0.35 ± 0.01 reported for canary melon seed oil [16] and 0.03 ± 0.01 reported for onion seed oil [17] valuable for cosmetic preparations.

Iodine value was 105.54 \pm 0.70 gI₂/100 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.

References

- [1] Shaltout, KH. Al-Sodany, Y.M. and Eid, EM. The biology of egyptian woody perennials. Ass. Univ. Bull. Environ. Res. 2006: 9 (1): 75-91
- [2] Al-sodany, YM., Shaltout, KH. and Eid, EM. Demography of Ipomoea carnea: An Invasive Species in the Nile Delta, Egypt. 2009.
- [3] Taufeeque, M., Abdul Malik, Sherwani, M R K. Screening of seed oils from four species of genus ipomoea. *Int J. Cur. Res. Rev.* 2015: 7(21):25-28.
- [4] Kumar,S., Prasad, A K. Iyer1, SV., Patel1, JA., Patel, HA. and Vaidya , SK. Pharmacognostical, phytochemical and pharmacological review on Ipomoea carnea. *Novus Intl J. Pharm.l Technol.* 2012: 1(4): 9-18.
- [5] Blench, R. Hausa Names for Plants and Trees. Printout December 11, 2007. Accessed at http://www.rogerblench.info/Ethnoscience%20data/Hausa%2 Oplant%20names.pdf p67. 11/05/2012. 2007.

- [6] Sharma, A and Bachheti, RK. A review of *Ipomoea carnea*. International Journal of Pharma and Biosciences. 2013: 4(4): 363
 – 377.
- [7] Srivastava, D and Shukla, K Pharmaceutical efficacy of Ipomoea carnea. Biological Forum. (2015: 7(1): 225-235
- [8] Pant, KS., Khosla, V., Kumar, D. and Gairola, S. Seed oil content variation in *Jatropha curcas* Linn. in different altitudinal ranges and site conditions in H.P. India. *Lyonia* .2006: 11(2):31-34.
- [9] John, K Analytical Chemistry for Technicians, 3rd Edition, Lewis Publishers, Kalyani Publisher, New Delhi, India, Pp 347-349. 2003.
- [10] Bassir, O. Handbook of practical biochemistry. Ibadan University Press, Ibadan, Nigeria. 1978.
- [11] Association of Official Analytical Chemists Official Methods of analysis of the Association of Official Analytical Chemists, 16th Edition, Gaithersburg, USA. 1998.
- [12] Akpan, UG., Jimoh, A and Mohammed, AD. Extraction and characterization and Modification of Castor seed. *Leonardo J. Sci* 8:43. 2006.
- [13] Warra, A A. Quality Characteristics of oil from Brown and Yellow Cyperus esculentus L. Tubers. Res. Rev. J. Bot. Sci. 2014: 3(1):23-26
- [14] Nwinuka NM. and Nwiloh ,B.. Physico-chemical Properties and Fatty Acid Composition of *Dennettia tripetala* Fruit Oil (Pepper Fruit) *Nigerian J. Biochem. Molecular Biol.*, 2009: 24(1): 42-46.
- [15] Warra, AA., Wawata, IG., Umar, RA., and Gunu, SY. Soxhlet extraction, Physicochemical Analysis and Cold process saponification of Nigerian Jatropha curcas L. Seed oil. Canadian J. Pure Appl. Scis. 2012: 6 (1): 1803-1807.
- [16] Warra AA, Sheshi F, Ayurbami H.S, Abubakar, A Physicochemical, GC-MS analysis and cold saponification of canary melon (*Cucumis melo*) seed oil. *Trends Ind. Biotechnol. Res.* 2015: 1(1): 10-17.
- [17] Warra, AA. and Sheshi, F. Physico-chemical, GC-MS analysis and Cold Saponification of Onion (*Allium cepa L.*) Seed Oil. *American J. Chem. Applications*. 2015: 2(5): 108-113.
- [18] Warra, AA., Wawata, I.G., Gunu, S.Y. and Birnin Yauri, A.U. Soap preparation from mechanically cold pressed Nigerian neem (azadiracta indica) seed oil. Chemsearch J. 2011: 2(1): 12-15.
- [19] Warra, AA., Wawata, IG., and Gunu, SY. Chemical analysis and base-Promoted hydrolysis of locally extracted shea nut fat. *Chemsearch. J.* 2011: (1): 12–15.