

Comparision Of Sun Protective Activity Of Garcinia Indica & Garcinia Mangostana

Seema V. Nayak¹, Dr. P. N. Mandhare², Sulekha R. Gotmare³

Ph.D Scholar, Dept. of Analytical Chemistry, S.N.D.T. Women's University, Santacruz (W),
Mumbai, 400049, India¹
Associate Professor, Dept. of Analytical Chemistry, S.N.D.T. Women's University, Santacruz (W),
Mumbai, 400049, India^{2,3}

ABSTRACT

A sunscreen active compound has been confined from the ethanol concentrate of Garcinia mangostana Linn (Clusiaceae). Disconnection and fractionation was guided by sunscreen movement test. The pericarp of mangos teen has been utilized in Thai indigenous medicine for the treatment of skin contaminations, wounds, and looseness of the bowels for a long time. Sun protective activity study have been done at different concentrations of Garcinia indica and Garcinia mangostana species. The good sun protective activity was found in ethyl extract of garcinia mangostana having SPF value 11.24 at 1.6% concentration.

Keywords: SPF, Garcinia indica, Mangos teen, UVR

INTRODUCTION

Today, usage of concentrates of plant as refreshments produced using flavors and medicinal plants displayed by-sound beverages, herbs, sodas, juices and syrup has expanded. Mangosteen skin is one of them. Mangosteen skin utilized. [Mishra A. K. et al, 2011]

Mangosteen (Garcinia mangostana Linn) is a fascinating fruit and has attractive shading with high nutrient substance, comprises of carbohydrates, protein, fat, calcium, phosphorus, iron, sodium, potassium, vitamin B1, vitamin C, and others. Tough skin of mangosteen contains xanthone, tars, flavonoids and tannins. The pericarp has additionally been demonstrated in various examinations, that it is invested with antibacterial potential [Arun K. M. et al, 2011]. Mangosteen fruit contains xanthoness and tannis shows antifungal, antiviral, antibacterial and

antioxidant property[Zarena et al, 2009]. It also shows good anticancer activity and also useful as remedy for inflammation, hepatitis, allergy etc.[Inas et al, 2014], [Yukihiro et al, 2008]. Ultraviolet radiation (UVR) is characterized as that electromagnetic radiation with wavelengths somewhere in the range of 100 and 400 nm, and is isolated into UVA (320-400 nm), UVB (290-320 nm) and UVC (200-280nm). Radicals engendered by UV A radiation can devastate cellular protein, lipids or carbohydrate. UV A and UV B radiations are harmful to human being as it can penetrate through skin. Most of the sunscreen products can block UV B rays but very few acts as UV A blockers. It is essential to make sunscreen formulation which can block UV A and UV B radiations also.[S. Dike et al, 2015, Bhatia S. et al, 2010]. The UVR-actuates reactions on intense skin impacts, for example, irritation, erythema, pigmentation, hyperplasia, immune suppression, vitamin D combination and endless impacts, for example, photo carcinogenesis and photo aging. Few fruits like mangosteen which contain antioxidant xanthenes showing good anticancer, ant proliferative, ant malarial, antifungal, antiviral activity, anti-platelet activity, which is also useful as remedy for inflammation, hepatitis, allergy etc.[Liandhagani et al, 2013]

As per Crawford (1985), having a solid skin involves poise, self-restraint, abstinence, and resolve. [Crawford et al, 1985].In Asian markets, skin-helping items significantly developed and have recorded in the course of recent decades and become top-selling item classifications in the Asian excellence industry in accordance with innovative advances and showcasing powers. [Masa-Aki S. et al, 2011]

I. MEDICINAL EMPLOYMENTS OF GARCINIA INDICA

In Ayurveda Kokum fruit is used in treatment of variety of infections. It is a hoard, oeuvre and tonic for liver and heart. The fruit implantation is used for treating skin diseases, like sensitivities, prodded skin, rashes, sears.[Mishra A. et al, 2006]It is moreover given in warmth stroke, diarrhea, and detachment of the guts, stacks and heart diseases. A polyisoprenylated benzophenone in fruit skin has antioxidant, unfriendly to malignant growth and against ulcer properties. The fruit also well known for cardio tonic, antimicrobial, antifungal property[fayaz Pasha et al, 2015], anti-malarial activity, anti-viral activity, ant platelet activity[Ibrahim Jantan et al, 2011], [Lih-Geeng Chen a et al, 2008].

II. MATERIALS AND METHODS

Extraction and fractionation of compound:

Prepare 1.4%, 1.5% and 1.6% of *Garcinia indica* and *Garcinia mangostana*, add 5 g of basic cream formula and 10 ml of ethanol, and mixed them individually to get homogeneous mixture. Use this cream for SPF content analysis.

Instruments for examination SPF (Sun Protection Factor) by spectrophotometer

Transmittance was measured by UV-Visible spectrophotometer (Shimadzu type UV-1800 arrangement, Japan) with 1cm coordinated quartz cells, micropipette of variable volume 10-1000 μ L and advanced electronic equalization (Sartorius) were utilized in this examination.

Different concentrations show different SPF values for *Garcinia mangostana* & *Garcinia indica*. At 14% concentration SPF values are 10.42 & 4.33 of *Garcinia mangostana* & *Garcinia mangostana* and *Garcinia indica* respectively.

IV. RESULT AND DISCUSSION

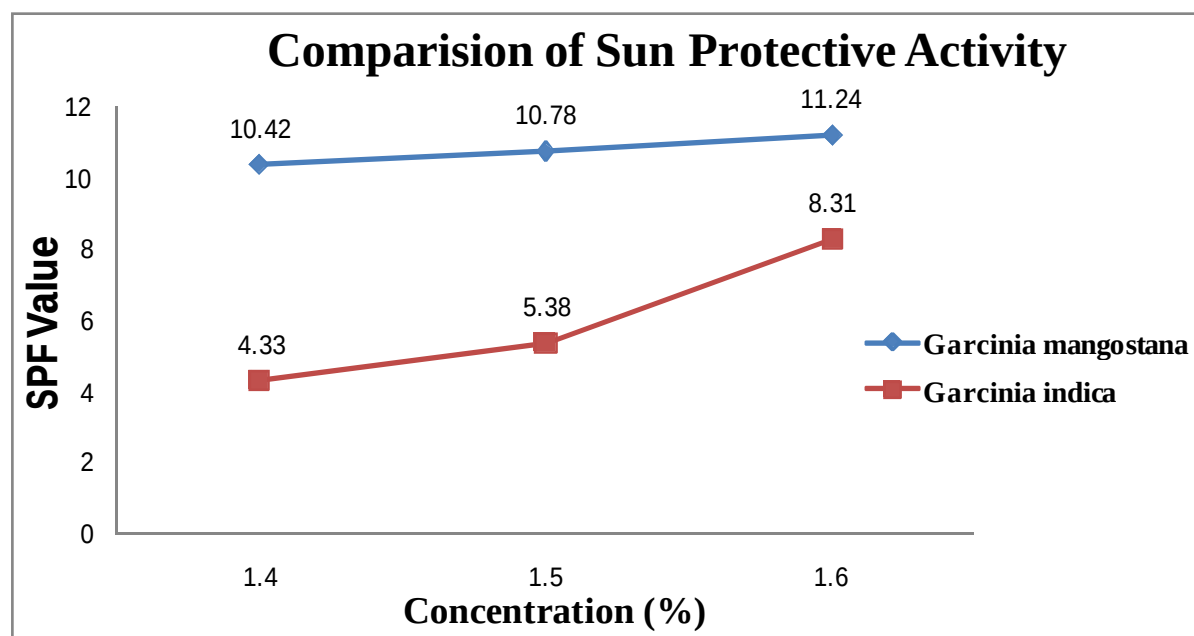


Figure 1: Comparison of Sun Protective Activity of ethyl acetate extract of *Garcinia indica* and *Garcinia mangostana*

Higher the value of SPF value indicates well sunprotective activity. In the solvent extracts *Garcinia mangostana* is showing good sunprotective activity. In ethyl acetate extract comparatively *Garcinia mangostana* is showing better sunprotective activity i.e., 11.24 for 1.6% concentration.

V. CONCLUSION

It implies that sun protective activity of mangostana is best when SPF value is more. The fraction of ethyl extract from mangosteen pericarp that shows the highest SPF value of 1.24 at 1.6% concentration, which is considered as the principle supporter for the sunscreen movement of the Ethyl acetate fraction.

REFERENCES

- [1] Mishra AK, Mishra A, Chattopadhyay P. Herbal cosmeceuticals for photoprotection from Ultraviolet B radiation: A review. *Tropical J. Pharma Res.* 2011; 10 (3): 351-360.
- [2] Arun K.M., Amrita M., Pronobesh C., Evaluation of Sun Protection Factor of some marketed Formulations of Sunscreen by Ultraviolet Spectroscopic Method. *J CPR.* 2011; 5(1): 32-35.
- [3] Liandhajani, Maria Immaculata Iwo, Sukrasno, Andreanus A. Soemardji, Muhammad Hanafi (2013) "Sunscreen Activity of α -mangostin from the Pericarps of *Garcinia mangostana* Linn" *Journal of Applied Pharmaceutical Science* Vol. 3 (06), pp. 070-073, June, 2013
- [4] Crawford, C. M. (1985), A New Positioning Typology. *Journal of Product Innovation Management*, 2: 243-253. doi:[10.1111/1540-5885.240243](https://doi.org/10.1111/1540-5885.240243)
- [5] Masa-Aki S., Munekazu I., Junji M., Hitomi K., Kanako A., Yasushi O., Yukihiro A. and Yoshinori O. α -Mangostin extracted from the pericarp of the mangosteen (*Garcinia mangostana* Linn) reduces tumor growth and lymph node metastasis in an immunocompetent xenograft model of metastatic mammary cancer carrying a p53 mutation *BMC Medicine* .2011; 9: 69
- [6] Mishra A, Bapat MM, Tilak JC and Thomas PA (2006). Antioxidant activity of *Garcinia indica* (kokum) and its syrup. *Current Science*, 91(1): 90-93.
- [7] Lih-Geeng Chen a, Ling-Ling Yang b, Ching-Chiung Wang. Anti-inflammatory activity of mangosteen from *Garcinia mangostana*. *Food and Chemical Toxicology* 2008; 688-693.
- [8] Inas O.K. et al, Isolation, characterization and some biological activities of a xanthone from *Garcinia mangostana*, *Journal of forest products and industries*, 3[5], 216-220, 2014

- [9] Yukihiro et al, Anticancer effects of xanthenes from pericarp of mangosteen, International journal of Mol. Sci., 9[3], 355-370, 2008
- [10] Zarena et al, screening of xanthone from mangosteen [*G. mangostana*] peels and their effect on cytochrome c reductase and phosphomolybdenum activity, Journal of natural products, 2, 23-30, 2009
- [11] Ibrahim Jantan et al, Inhibitory effects of extracts of garcinia species on human low density lipoprotein peroxidation and platelet aggregation in relation to their total phenolic content, Journal of medicinal plant research, 5[13], 2699-2709, 2011
- [12] Sasikala S et al, Comparative analysis of α - mangosteen in developed nutraceutical with market sample, International Journal of Applied Research, 1[8], 790-798, 2015
- [13] Fayaz Pasha P et al, Extraction of phytochemical, screening and anti-oxidant activity of *Garcinia indica* Choisy fruit, World Journal of Pharmacy and Pharmaceutical Sciences, 3[12], 726-731, 2014
- [14] S. Dike et al, Sun protective activity of water immiscible pigment of fruit extract of *Garcinia indica*, International Journal of Pharmaceutical sciences and research, 6[6], 2518-24, 2015
- [15] Bhatia S. et al, Broad spectrum sun protective action porphyrin-334 derived from *porphyra vietnamensis*, Pharmacognosy research, 2, 45-49, 2010