

Analyzing The Impact Of Antioxidant Property Of Garcinia Mangostana

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ABSTRACT

Garcinia mangostana has been documented in Thai traditional medicine in various aspects. Although many benefits have been claimed, few scientific reports are available in the literature. The antioxidant properties were determined by scavenging DPPH, nitric oxide and lipid radicals in dose-dependent manners. In particular, the powerful scavenging activities were found. These data indicated that Garcinia mangostana played a pivotal role on the antioxidant and chemo preventive activities via a reducing mechanism and inhibition of intra cellular oxidative stress respectively. Antioxidant property of Garcinia mangostana have been studied by using different solvent extracts with different concentrations. The good free radical scavenging activity was found in THF extract at 20mg/ml concentration.

Keywords: α -mangostin, Antioxidant property, DPPH.

I. INTRODUCTION

As of late, the attention on plant research far and wide has expanded; various lines of proof have been assembled to show the gigantic capability of medicinal plants. By methods for current logical methodologies, various sorts of medicinal plants have been perceived and considered. The outcomes uncover these medicinal plants as having a promising potential, especially in pharmacology. [Vishnu Priya et al, 2010]

Various human diseases have been related with oxidative stress; these incorporate diabetes, cardiovascular diseases, neuro degenerative issue and particularly carcinogenesis. Therefore, a great deal of intrigue is given toward researching normally happening defensive antioxidants just as their components of activity. As per this, it has been uncovered that various plant removes or their secondary metabolites show groundbreaking antioxidant action and the capacity to shield from oxidant-prompted harm. [Lee SE et al, 2003]

The fruit rind extract of mangosteen have about 95% xanthones alongwith isoflavones, tannins and flavonoids [Ibironke A et al, 2013]. Mangosteen pericarp is wealthy in polyphenolic compounds called xanthones which incorporates compounds like α -mangostin, β -mangostin, γ -mangostin, garcinone C, D, E. [Ngawhirunpat T et al, 2010, Jose Pedraza Chaverri et al, 2008, Chitchumroonchokchai et al., 2012, Ibironke A et al, 2013]. Xanthones have antioxidant, anti-inflammatory, antibacterial, anti-cancer, [Inas et al, 2014, Sasikala S et al, 2015, Yukihiko et al 2008], anti-allergy, antiviral, antifungal property. [Susy Tjahjani et al., 2014, Palakawong C et al, 2010, Zarena et al., 2009] Garcinia mangostana also useful in

treatment of dysentery, urinary disorder, skin infections and chronic wounds [Ibironke A et al., 2013, VishnuPriya et al, 2010, Pedreza chaveri et al.,2008].

Mangosteen (*Garcinia mangostana* Linn) is a tropical fruit that develops in the Asian countries, for example, Malaysia, Myanmar, Thai-land, Philippines, Sri Lanka and India. Mangosteen is additionally alluded to as the "queen of fruits" because of its interesting and scrumptious tropical taste. The fruit is dull purple or ruddy in shading and contains delicate and delicious consumable white pulps inside. The flavor is marginally acidic and sweet and it has a wonderful smell. [Jose Pedraza et al., 2008, Jung et al.,2006].

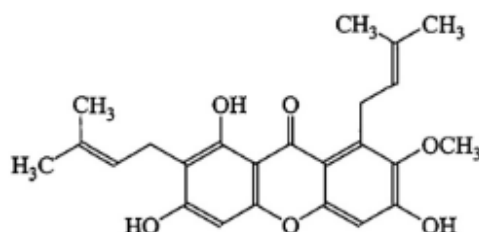


Figure 1: Chemical structure of α -mangostin.

Mangosteen with the botanical name *Garcinia mangostana* Linn is viewed as a queen of fruits or a superfruit since it is supplied with properties, conceivably helpful to general health of a person. The fruit, which is local to Southeast Asia, has been a vital constituent of Chinese medicine and Ayurveda since antiquated time. [Jose Pedraza-Chhaveri et al, 2008]

II. ANTIOXIDANT PROPERTIES OF α -MANGOSTIN

The antioxidant movement of the α -mangostin could be changed by its structural modifications. For example, substituting C-3 and C-6 with amino-ethyl subordinates made the antioxidant action be enhanced, while substituting them with methyl, propanediol, acetic acid derivation or nitrile brought about a decline of antioxidant action. [Palakawong C et al, 2010]

III. MATERIALS AND METHODS

The extraction of mangosteen pericarp in THF concentrate indicated greatest antioxidant action and free radical scavenging activities in vitro conditions. Moreover, the antioxidant action was observed to be diverse for various types of dissolvable extracts. [Fu C et al, 2010]

Preparation of extracts:

20 g dried samples of *Garcinia mangostana* weighed and each sample added with 100 ml of solvents namely ethyl acetate, THF and cyclohexane. They were kept at 37°C for 24 hours and extracted by soxhlet extraction apparatus. It is then subjected to drying under controlled atmosphere and temperature using vacuum evaporator. The dried material was further used for DPPH activity at different concentrations of extracts at 20mg/ml, 50 mg/ml, 75 mg/ml and 100 mg/ml. 0.2 mM DPPH solution is prepared. In 3ml of each concentration solution of each solvent extract, 200 μ l of 0.2 mM DPPH solution added, shake vigorously and kept standing 30 mins. in dark. Thereafter it is used for spectral scanning at 517 nm. [Fayaz Pasha P et al, 2014]

IV. Result and Discussion: Table 1: Antioxidant Property of *Garcinia mangostana*

DPPH method is used to study antioxidant activity of different solvent extracts of mangosteen fruit rind.

To study antioxidant activity of *Garcinia mangostana* three solvent extracts were used namely Ethyl acetate, THF, Cyclohexane at different concentration of 20 mg/ml, 50 mg/ml, 75 mg/ml, 100 mg/ml. the good antioxidant activity was found in 20 mg/ml THF extract which exhibit 90.48 % inhibition of DPPH free radical, while 20 mg/ml of ethyl acetate and cyclohexane extract of fruit exhibited 87.42 and 67.79 moderate percentage respectively

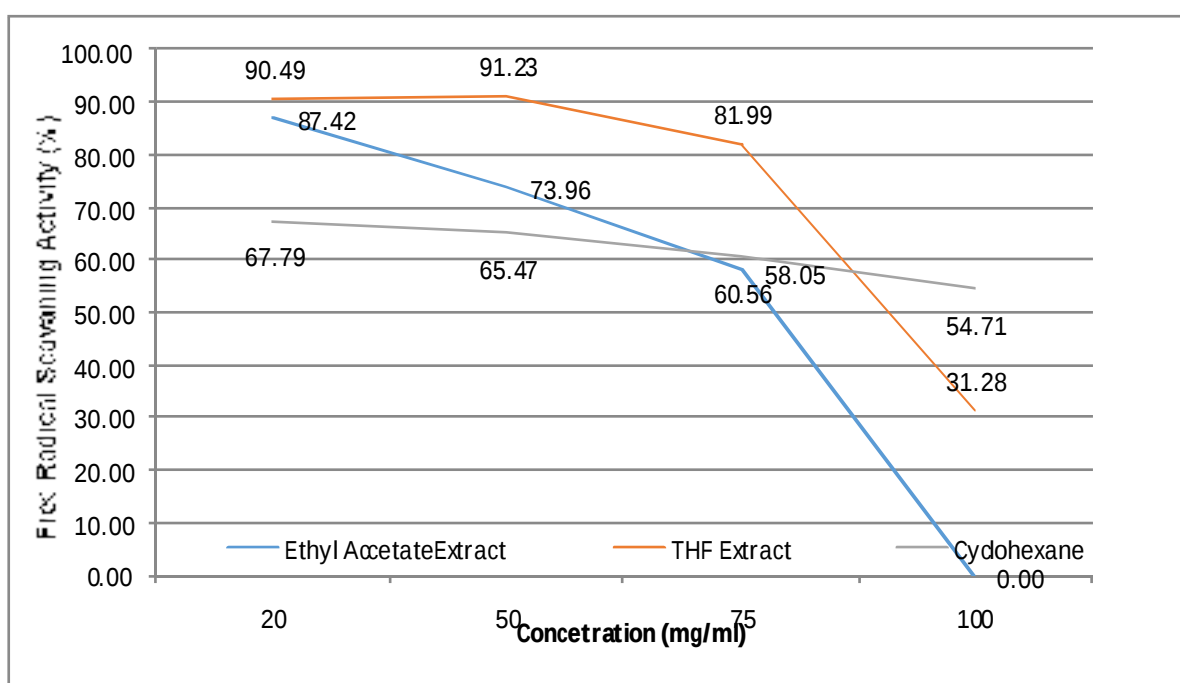


Figure 2: Figure showing Antioxidant Property of different solvent extracts *Garcinia mangostana*

V. CONCLUSION

From the above study, it was observed that as the concentration increases antioxidant activity goes on decreases because antioxidant activity may suppressed by other constituents of *Garcinia mangostana* in high concentration. In THF extract it shows much better activity up to 75mg/ml. Whereas in cyclohexane activity is 67 to 54% shows activity is almost maintain even in higher concentration extract indicates that activity is not much affected by other constituent of *Garcinia* fruit.

The examinations that are looked into above show the promising characteristics and broad potential preclinical utilization of α -mangostin which are generally because of its assorted pharmacological impacts.

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