

## Antioxidant Activity Of Combination Of Garcinia Mangostana Pericarp And Hibiscus Sabdariffa Calyxes

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**Abstract:** *Garcinia mangostana* (GM), belongs to *Garcinia* family, it is an indigenous plant from Indonesia that has been known for its fruit, and the fruit pericarp just becomes as waste. Roselle calyxes (RC) from the *Hibiscus sabdariffa* Gaertn. were frequently used in folk medicine in the middle-east and some Asian countries for the promotion of good health. The purpose of this study was focused on utilization of mangostana pericarp (MP) with RC to make herbal tea formula in the tea bag. We prepare three formulas with different concentration of MP and RC. The antioxidant activity of these formulas, were measured by DPPH method. Hedonic test is also performed in this study to measure public acceptance for taste, aroma and color of the best formula. The result showed that the combination of MP and RC in formula with the composition 1.5 g of MP and 1.0 g of RC possessed the highest antioxidant activity ( $IC_{50} = 148.1 \mu\text{g/ml}$ ). This formula also contains 60 mg stevia extract which is preferable for the panelist in the hedonic test.

**Keywords:** Antioxidant activity, *Garcinia mangostana*, herbal tea, *Hibiscus sabdariffa*.

### Introduction

*Garcinia mangostana* is a tree which attains a height of 15 meters, cultivated as a fruit tree, in tropical countries. The methanol extract of GM have antioxidant and cytoprotective activities also on inflammation caused by *Propionibacterium acne*<sup>1,2</sup>.

Spiral incisions through the bark from the ground upward permit the resinous emulsion in the cortex and phloem to exude. The leaves are shiny and dark green above, dull pale green beneath, or yellow-green on both surfaces. Flowers with yellow-green outer sepals, about 2 cm long, staminodes shorter than ovary. The edible fruit mangosteen has dark-purple pericarp, depressed-globose, with sessile, large stigma, 1 – 3 seeds and has a sweet taste. Xanthone compound are the major component in the GM that have antioxidant activity<sup>3</sup>.

The calyxes from the *Hibiscus sabdariffa* Gaertn are used in folk medicine in some Asian countries for treatment of many ailments, to reduce weight, to decrease blood viscosity, as diuretic, diaphoretic, cholagogue, and hypotensive<sup>4,5,6</sup>. The plant is an erect annual herb which belongs to the Malvaceae family with reddish cylindrical stem, nearly glabrous. The leaves are simple, having petiole, with blade 3-5 lobes. Flowers are solitary, axially, nearly sessile, 5-7 cm diameter, calyx is thick, red and fleshy, cup-like, petals 5, yellow, twice as long as calyx. The aqueous extract from RC has inhibition activity to DPPH up to more than 90%<sup>7</sup>.

MP and RC can be used to support community health as a healthy beverage. This opportunity is obvious because (MP) it is usually considered as an un-useful waste. Both plants grow abundantly in Indonesia but are still yet to be used optimally.