

Determining Total Phenolic and Anthocyanin Content in Guam Cultivars of *Capsicum annuum* (Hot Pepper)

Nathan Grant Sala

Dr. Mari Marutani, PhD, University of Guam, Maegan Delfin, BS, University of Guam
Coordinating Center: University of Hawaii at Manoa

ABSTRACT

Phenolics are phytochemicals that are commonly associated with the antioxidative properties of plants. Flavonoids are a class of phenolics, and anthocyanins, a subgroup of flavonoids, are responsible for the orange, red, and purple color of fruits and flowers. Research interest has increased in the use of these phytochemicals as a natural food colorant and utilization of their antioxidative properties on human health. Hot pepper (*Capsicum annuum* L.) is a common vegetable used in local cuisine in Guam; however, there have been no records on the total phenolics and anthocyanin content of local cultivars. In determining the anthocyanins and total phenolic contents of pepper fruits, we hypothesize that five local cultivars have the same concentration of the total phenolics and anthocyanins.

Fresh fruit samples of five cultivars, 'Guafi Triton,' 'Barcinas,' 'Saipan,' 'Toves,' and 'Hachon' were freeze-dried and ground. The total phenolics and anthocyanins were extracted with acidified methanol.

Anthocyanins were detected using High-Performance Liquid Chromatography (HPLC) at 520 nm. The total phenolic concentration will be examined by the Folin-Ciocalteu method using U-V Spectroscopy. The color of fruits of each cultivar was also measured by a colorimeter to express the color as L*, a*, and b* coordinates.

In preliminary studies, there were three anthocyanins detected. Cyanidin-3-glucoside was present more in red fruit cultivar 'Saipan' (0.806 mg/kg of fresh weight) than 'Hachon' with yellow fruits (0.058 mg/kg of fresh weight). Further study will be continued to determine other anthocyanins and the total phenolics.

KEY WORDS: *Capsicum annuum*, Hot Pepper, Anthocyanin, Phenolics, Fruit Color

ACKNOWLEDGEMENTS:

The STEP-UP High School program is supported by the Nation Institute of Diabetes and Digestive and Kidney Diseases of the National Institutes of Health, Grant Number: R25DK78386-15.