ABSTRACT

Isolation of Anthocyanins and Other Flavonoids from the Ornamental *Anthurium andraeanum*

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The *Anthurium andraeanum* (Hort.) is a monocotyledonous ornamental belonging to the *Anthurium* genus, which is the largest genus of the Araceae family. The inflorescence consists of a glossy, heart-shaped spathe which comes in various shades of red, pink, orange, coral, white, green and a few cases of brown. These spathes have been responsible for the cut flower's popularity, generating millions in proceeds worldwide. Via cross breeding among the varieties of cultivars, novel hues of the existing colours and mixed colour spathes have been achieved. However, no novel colours can be achieved through this method and no blue-hued spathes exist which indicates that the pathway leading to delphinidin production (anthocyanin responsible for blue hues) is either absent or switched off.

A chemical investigation of two varieties of *Anthurium andraeanum,* 'Lydia' pink and 'Success' red was undertaken in an effort to isolate and identify flavonoids along the biosynthetic pathway. The objective of this research was to utilize the flavonoids identified and develop a chemical profile which can be used in conjunction with the proposed genetic profile to provide insight to suggest possible modification of the genetic model to develop novel colours.

Seven flavonoids were identified; two (2) flavone-*C*-glycosides (swertisin-2-O-rhamnoside **LVII** & embinin **XXVII**), one (1) flavanols (epicatechin **XLIII**), two (2) flavonols (quercetin **XLV** and quercetin-3-*O*-rutinoside **LX)** and two (2) anthocyanidins (cyanidin **XIII** and peonidin **LXI**). Structural elucidation of these compounds was achieved by various spectroscopic techniques; 1D and 2D NMR, IR, HPLC-MS and HRESIMS. The identification of these compounds indicates that the pathway to cyanidin (anthocyanin responsible for red hues) production is being followed and that the genes for production of delphinidin are either switched off or absent.

Keywords: Tahirah Sanderson; *Anthurium andraeanum*; spathe; flavonoid biosynthetic pathway; anthocyanins; flavonoids; colour modification