Title Physiological characterization of flower senescence in long life and ephemeral hibiscus (*Hibiscus rosa-sinensis* L.)

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Abstract

The most part of hibiscus plants produces short life flowers that last one day. Therefore they are called ephemeral and flower senescence is usually associated with petal in-rolling and abscission. Flowers are well shaped and different organs can be easily separated, these characteristics make the hibiscus a good model system for flower senescence studies. The aim of this work was to identify metabolic differences and hormonal profiles in petals of different flowers of hibiscus plants that show different flower longevity. Different hibiscus (*Hibiscus rosa-sinensis* L.) plants were screened under controlled environment for identifying different clusters. Among the plants screened the physiological studies were performed on the following cultivars: 'Caribbean Tricolour', 'Caribbean Dark Pink', 'Caribbean Pink', 'Caribbean White', 'Caribbean White eye', 'Porto' and 'La France'. Flowers were detached from different clusters and placed in postharvest room for vase life determination. Flower harvesting was performed in the morning usually between 9:00 and 12:00 a.m. Detached flowers were placed in deionised water. Ethylene production, abscisic acid content, anthocyanins, total phenols and carotenoids were measured. All data were analysed and correlated with flower longevity. The ephemeral flowers lasted 12-18 h, while the longest flower life was 3-4 days in 'Porto'. The ethylene production and ABA content were inversely proportional to flower longevity. In fact the longest flower life was observed in hibiscus plants that had the lowest ethylene production.