

**Title** Relationship between leaves kinetin-induced ethylene biosynthesis and fruit climacteric behavior of *Psidium guajava* L.

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**Citation** Abstracts of 27th International Horticultural Congress & Exhibition (IHC 2006), August 13-19, 2006, COEX (Convention & Exhibition), Seoul, Korea. 494 pages.

**Keywords** guava; ethylene; climacteric fruit; kinetin

#### **Abstract**

Respiration behavior and ethylene production rate of 20 cultivars of guava (*Psidium guajava* L.) fruit were determined at 20°C after harvest. 'Fruit of 13 cultivars of guava, Herng-Chuen Taiwan Wild', 'Hawaii Red', 'Red', 'Hybrid 27-34', 'Hybridia(2)-31', 'South Africa', 'Samara Red', 'Red 66-90', 'Red Select-15', 'Li-Tzy-Bar', 'Jong-Shan Yueh Bar', 'Pei Bar' and 'Dar-Dih', were found to be climacteric in their respiratory patterns. Other cultivars including 'Tai-Kuo Bar', 'Shyh-Jii Bar', 'Sheh-Tour Jen-Ju Bar', 'Dah-Sheh Jen-Ju Bar', '20 Shyh-Jii var. Bar' and 'Seedless', exhibited a typical non-climacteric respiratory pattern. IAA, kinetin and CaCl<sub>2</sub> were tested to evaluate their capacities of inducing ethylene production in excised guava leaf discs. Kinetin (0.1mM) stimulated more ethylene production than other treatments. The effect of kinetin on ethylene production of guava leaf discs that were excised from various cultivars was studied. Kinetin greatly increased ethylene production of climacteric fruits such as 'Li-Tzy Bar', 'Pei Bar', 'Jong-Shen Yueh Bar', 'Dah-Dih' and 'Native-Red' cultivars. However, the kinetin effect on the non-climacteric cultivars of 'Tai-Kuo Bar', 'Shyh-Jii Bar' and 'Jen-Ju Bar' was negligible. Seedling hybrids obtained from crossing 'Tai-Kuo Bar' (non-climacteric) and 'Li-Tzy Bar' (climacteric) were mainly climacteric and there were very few non-climacteric offspring. A close, positive correlation was found between kinetin-induced leaf ethylene biosynthesis and fruit climacteric behavior of *Psidium guajava* L. It is suggested that kinetin stimulated ethylene production of excised guava leaf discs could be used as an index of fruit ripening and could be useful in the selection and breeding of desirable cultivars of *Psidium guajava* L.