

Title Spatial and temporal profile of non-structural carbohydrates in pre-climacteric Sri Lanka mango (*Mangifera indica* L.) Fruit

Author T. Thanaraj and L.A. Terry

Citation ISHS Acta Horticulturae 858:137-142. 2010.

Keyword chemical composition; maturity stages; peel; pulp; starch; sugars

Abstract

There is no published information on the genotypic variation of major biochemical constituents in mango fruit endemic to Sri Lanka. Accordingly, non-structural carbohydrates (NSCs) were determined from the peel and pulp of pre-climacteric Sri Lankan mango cultivars (viz. 'Willard', 'Karutha Colomban' and 'Malgova') at three different maturity stages. Sugars and starch were quantified using standard HPLC and a total starch assay kit, respectively. Sugar content of both pulp and peel reduced with maturity in 'Malgova' and 'Karutha Colomban', yet increased in 'Willard'. Total sugars were significantly higher in the pulp and peel (300.7 mg g^{-1} and 177.1 mg g^{-1} , respectively) of 'Malgova' than that of 'Willard' (236.5 mg g^{-1} and 143.2 mg g^{-1}) and 'Karutha Colomban' (128.1 mg g^{-1} and 85.4 mg g^{-1}). Reducing sugars contributed to ca. 80% of total sugars, whereby fructose was dominant in both pulp ($67.4\text{-}141.3 \text{ mg g}^{-1}$) and peel ($56.2\text{-}106.1 \text{ mg g}^{-1}$) followed by glucose and sucrose. Sucrose ($5.2\text{-}29.8 \text{ mg g}^{-1}$) was significantly lower in peel samples. Although there was no noticeable variation in starch concentration between pulp and peel at immature stage, starch increased with maturity and was significantly higher in pulp (26.0-55.0%) than peel (18.2-38.9%) at full mature stage. The mean starch concentration was higher in both pulp (36.6 mg g^{-1}) and peel (31.2 mg g^{-1}) of 'Malgova' followed by 'Karutha Colomban' and 'Willard'. Implications of these biochemical changes on subsequent postharvest quality are discussed.