Title Exogenous application of Prohexadione-calcium promotes accumulation of anthocyanins and colour of roselle calyx

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Abstract

The quality of roselle is much depending on the red colour of its calyx. The calyces with deep red colour will assist the producer to attract the market. The red colour of roselle is purely determined by the type and concentration of anthocyanins present in the calyx cells. Newly discovered growth regulator, Prohexadione-calcium (ProCa) has been known to improve red colouration in various fruits skin by reducing shoot growth and allowing greater light penetration into tree canopies. A formulated aqueous solutions containing 0 (control), 50, 100 and 150 $mg \cdot L^{-1}$ of ProCa were sprayed onto young shoots of roselle in the field at 40 days after transplanting. The reduction of shoot length was pronounced with spray application of 100 and 150 $mg \cdot L^{-1}$ ProCa. These two treatments also gave a significantly higher accumulation of anthocyanins in roselle calyx as compared to control. Exogenous application of ProCa on roselle also resulted in the higher level of chromaticity value a*, chroma and lower lightness as compared to control. The yield number and fresh weight increased with the application of ProCa without adversely affecting other quality attributes such calyx firmness, titratable acidity and soluble solids concentration. As a conclusion, spray application of ProCa (100 and 150 $mg \cdot L^{-1}$) reduced shoot growth, improved calyx colour, increased accumulation of anthocyanins and also maintained other fruit quality attributes of roselle.