Abstract:

Lycopene is responsible for the red colour in tomato although other pigments are also present in ripening fruits such as phytoene (colourless) and ξ-carotene (pale yellow), β-carotene (orange); and xanthophylls (yellow). Colorimeter measurements were used to trace pigment synthesis and to investigate the effect of some growth regulators on ripening under two different temperature regimes. mature green (MG) fruits (cv. Tommy; 3 replicates of 30 fruits each) were dipped for 30 minutes in a solution of either 1000 ppm gibberellic acid or ethephon [(2-chloroethyl) phosponic acid] and pure water (control) and stored at 20 and 12 °C for 18 and 32 days respectively. Colour was periodically measured (Minolta Chromameter CR-300) and recorded as the average of 4 different points from each fruit. L* values were not affected by treatments and only the a* and b* values were analysed. Analysis of the chromatic parameters suggests that synthesis of yellow(ish) pigments precede that of red(ish) ones. It is possible that these yellow tones were the expression of colourless (phytoene) and pale-yellow (ξ-carotene) precursors before the masking effect of the massive accumulation of lycopene (red) and β-carotene (orange) took place. Low temperature (12 °C) probably inhibited lycopene synthesis (at least partially), but β-carotene synthesis still progressed yielding pale red fruits. Ethephon immersed fruits had the highest a* values. At both temperatures ethephon accelerated carotenoid synthesis while gibberellins delayed it.