

Abstract

The growth and development of pummelo cvs. “Thong Dee” and “Chandler” during 8-32 weeks after full bloom (WAFB) at Wieng Kean district, Chiang Rai province was studied during 2008-2009. It was found that the growth and development of the peel during 8-16 WAFB were mainly found and were faster than those of the flesh. The “Chandler” cultivar had fruit weight, flesh weight, peel weight, peel thickness, fruit circumference and fruit height more than “Thong Dee” cultivar after 28 WAFB. At 24 WAFB, the +a* value of “Chandler” cultivar was also higher than the other cultivar. In addition, the chemical properties, total soluble solids (TSS) level at maturation (28 WAFB) of “Thong Dee” and “Chandler” cultivars increased dramatically with 8.0% and 8.4%, respectively. There were no significant difference in total sugar and non-reducing sugar levels. However, the reducing sugar content of “Thong Dee” cultivar was higher than “Chandler” cultivar. Furthermore, the coefficient correlation (r) between fruit circumference and fruit weight ($r=0.7930$) was less correlation when compared with fruit weight and flesh weight ($r=0.9304$). The fruit weight also highly correlated to TSS level ($r=0.8444$). The bioactive compounds including flavonoids, vitamin C, carotenoids, total phenolic compounds of pummelos during 24-32 WAFB in 2009 were evaluated. The results showed that naringin was the major flavonoids in “Thong Dee” and “Chandler” cultivars which were found in 50-58% and 28-36% of total flavonoids, respectively. The “Thong Dee” pummelo at 24 WAFB had the highest naringin content (72.89 mg/100 gFW) while the lowest naringin content was found in “Chandler” pummelo at 28 and 32 WAFB (~17 mg/100 gFW). However, seven flavonoids including hesperidin, neohesperidin, kaempferol, rutin, apigenin, quercetin and naringenin were not found in in both pummelos. The “Thong Dee” pummelo also had the highest contents of total phenolic compounds (94.93 mgGAE/100 gFW) and vitamin C (~44 mg/100 ml). Their contents of “Chandler” pummelo were 54-62 mgGAE/100 g FW and vitamin C (~44 mg/100 ml), respectively. On the other hand, the highest lycopene content was found in “Chandler” pummelo at 32 WAFB (1.67 mg/100 gFW) and the lowest content was “Thong Dee” pummelo during 24-32 WAFB (0.29-0.40 mg/100 gFW). In addition, naringin, total phenolic compounds, vitamin C were highly correlated to DPPH-assay ($p\leq 0.01$) which correlation coefficient values were $r=0.6928$ to $r=0.7805$, excepted lycopene ($r=-0.7524$).

Keywords: Pummelo, Growth, Maturity, Flavonoids, Antioxidant capacity