

Antioxidant activity, total phenolic content, and chlorophyll content of Keningau grown cucumis sativus L. at two growth stages

Abstract

The maturation stage of *Cucumis sativus* is among the important factors affecting its composition and quality. Hence, this study monitored the differences in total phenolic content (TPC), antioxidant activity, pigment and colour of Keningau-grown cucumbers (*Cucumis sativus* L.) at two stages of maturities, namely the semi-ripe (SR) and ripe (R). The colourimetric and spectroscopic findings revealed significant differences in the assessed variables ($P < 0.05$) in the two growth stages except for the pigment. The colour of semi-ripe cucumbers was of lower L^* (33.39 ± 4.26) and a^* (-10.00 ± 1.74) mean values, while the ripe cucumbers registered the corresponding mean values of 36.71 ± 2.85 and -8.90 ± 1.85 . R cucumbers gave a higher mean b^* coordinate (16.38 ± 3.16) over the SR ones (14.52 ± 2.52). Compositions of pigments, namely, chlorophyll-a (SR: $4.86 \pm 0.01 \mu\text{g/mL}$, R: $3.55 \pm 0.00 \mu\text{g/mL}$), chlorophyll-b (SR: $2.12 \pm 0.02 \mu\text{g/mL}$, R: $1.79, 0.02 \mu\text{g/mL}$) and total chlorophyll were higher in SR ($6.98 \pm 0.02 \mu\text{g/mL}$) than R ($5.34 \pm 0.02 \mu\text{g/mL}$) cucumbers, except for the composition of carotenoids (SR: $0.82 \pm 0.01 \mu\text{g/mL}$, R: $1.78 \pm 0.01 \mu\text{g/mL}$). The TPC in SR was higher ($424.21 \pm 5.32 \text{ mg/g}$) than the R ones ($185.51 \pm 4.62 \text{ mg/g}$), with the corresponding antioxidant activity (IC₅₀) for SR and R at 157.98 ± 1.57 and $191.66 \pm 2.58 \mu\text{g/mL}$, respectively. TPC and antioxidant activity between the SR and R cucumbers were negatively correlated (-0.992), which meant that not all phenolic compounds were involved in free radical scavenging.