

Abstract:

Fruit extracts from four raspberry cultivars, *Rubus idaeus* L., 'Heritage', 'Kiwigold', 'Goldie', and 'Anne' were evaluated for total antioxidant capacity and cancer cell antiproliferative activity to study the health benefits of raspberries. The total amount of phenolics and flavonoids for each of the raspberry cultivars was determined. 'Heritage' had the highest total phenolic content (512.70 ± 4.66 mg/100g fruit) followed by 'Kiwigold' (451.06 ± 4.45 mg/100g fruit), 'Goldie' (427.51 ± 7.51 mg/100g fruit) and 'Anne' (359.19 ± 3.35 mg/100g fruit). Similarly, 'Heritage' contained the highest total flavonoids (103.41 ± 2.04 mg/100g fruit) followed by 'Kiwigold' (87.33 ± 1.83 mg/100g fruit), 'Goldie' (84.16 ± 1.82 mg/100g fruit) and 'Anne' (63.53 ± 0.65 mg/100g fruit). The color of the raspberry juice correlated well to the total phenolic/flavonoid content. 'Heritage' had the highest a/b colorimeter ratio and the darkest colored juice with the highest phenolic/flavonoid content, and 'Anne' had the lowest phytochemical content, the palest color, and lowest a/b ratio. 'Heritage' had the highest total antioxidant activity, followed by 'Kiwigold' and 'Goldie'. 'Anne' had the lowest antioxidant activity of the cultivars tested. The proliferation of HepG2 human liver cancer cells was significantly inhibited in a dose-dependent manner after exposure to the raspberry extracts. The extract equivalent to 50 mg 'Goldie', 'Heritage', and 'Kiwigold' fruit inhibited the proliferation of those cells by $89.43 \pm 0.11\%$, $87.96 \pm 0.19\%$ and $87.55 \pm 0.98\%$, respectively. 'Anne' had the lowest antiproliferative activity of the cultivars measured, but exhibited a significant inhibition of $70.33 \pm 1.15\%$ with an extract equivalent to 50 mg of fruit. The antioxidant activity of each of the cultivars was directly related to the total amount of phenolics and flavonoids ($p < 0.01$), but no significant relationship was found between antiproliferative activity and the total amount of phenolics/flavonoids ($p > 0.05$).