

## ABSTRACT

Catechins in green tea mainly EGCG are known to play an important role in antioxidant and anticancer activities. However, the stability of catechins which is strongly influenced by its environment, such as temperature and pH, becomes obstacles in the use of green tea for health. This study aims to evaluate the effect of guava or lemon fruit powder addition on the stability of the EGCG content in green tea and its antioxidant activity. Determination of EGCG stability in green tea was carried out by measuring the levels of EGCG for 7 days of storage using the TLC-densitometry method while the antioxidant activity of green tea was evaluated by the DPPH method (2,2-diphenyl-1-picrylhydrazyl). Green tea with the addition of guava fruit powder had a higher EGCG content of 8-37% compared to green tea samples only. The addition of guava fruit powder in green tea prevented the degradation of EGCG through a decrease in the pH of the solution (4.65-5.03) and the presence of vitamin C (0.1-0.4% b/b). After 7 days of storage, the formula GTGV 2:3 and GTGV 2:2 contained the largest EGCG, respectively namely  $3.23 \pm 0.07$  and  $3.17 \pm 0.12$  mg/100 mg. While the amount of EGCG detected in green tea added with lemon decreased due to a decrease in the pH of the green tea solution that was too extreme (2.47-3.01). The addition of guava fruit into green tea solution increased the antioxidant activity of green tea up to 10%. After 7 days of storage, the formula with the addition of guava which had the best antioxidant activity was GTGV 2:2 with an  $IC_{50}$  value of  $49.14 \pm 0.04$  ppm. The addition of lemons increased the antioxidant activity of green tea up to 30%. After 7 days of storage, the formula with the addition of lemon which had the best antioxidant activity was the GTL 2:4 formula with an  $IC_{50}$  value of  $26.47 \pm 0.04$  ppm. The results were likely due to the contribution of vitamin C and other flavonoids in guava and lemon which also have antioxidant activity.

Keywords: EGCG, green tea, guava, lemon, stability, antioxidant activity