

## ABSTRACT

### **Antioxidant Activity Assay of Green Tea (*Camellia sinensis*) and Apple (*Malus domestica*) Combination Using Spectrophotometry UV-Vis with DPPH Reagent Literature Review**

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Green tea (*Camellia sinensis* L.) have higher antioxidant activity than black tea and oolong tea. In green tea, compound have role as antioxidant is catechins. Based on antioxidant activity of tea, many products combine tea with other ingredients that have antioxidant activity to increase antioxidant activity. In this literature review uses apple. Apple (*Malus domestica* B.) is a fruit that often consumed besides that it has high antioxidant activity. Compound that has role as antioxidant is quercetin. However, there has been no further information regarding the antioxidant activity by combination apple and green tea. In this literature review, the antioxidant activity test was using the DPPH method, this method is known to be simple, fast, easy and sensitive to samples with small concentrations. The type of review conducted in this study is a scoping review using keywords: "Antioxidant activity green tea polyphenols DPPH", "antioxidant activity apple", "antioxidant activity green tea and apple" and "synergistic catechin and quercetin". The databases used are Google Scholar, Pubmed and Scopus. There were 13 journals reviewed. The antioxidant activity test of the combination of green tea and apples showed an increase in inhibiting DPPH free radicals. The antioxidant activity with apples was  $15.5 \pm 0.5$  mmol TE / kg, while in combination with green tea it increased to  $72.1 \pm 1.1$  mmol TE / kg. This shows that the antioxidant activity in DPPH inhibition is higher in the combination of green tea with apples compared to apples themselves. There is also a synergistic interaction of catechin compounds with EGCG, then there is a synergistic reaction between quercetin and green tea extract with a ratio (1: 2), (1: 3), and (1: 9). This literature review is to show an increase in antioxidant activity in the combination of green tea with apples.

**Keywords :** Green tea, apples, antioxidant activity, DPPH, Combination