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Lycopene is one of the naturally occurring carotenoids and is responsible for the characteristic of deep-red color in plants including watermelon (*Citrullus lanatus*). Lycopene exhibits the highest antioxidant activity and singlet oxygen quenching ability among all dietary carotenoids [1]. Therefore, this study aimed to evaluate the extraction method with various solvents, examine the antioxidant activities and study the stability of lycopene from watermelon extract. Freeze dried watermelon was extracted by Soxhlet's extraction using different solvents, which were ethyl acetate (E1 extract), hexane: acetone: ethanol (2:1:1) (E2 extract) and ethyl acetate: ethanol (1:1) (E3 extract). Lycopene content was analysed by high-performance liquid chromatography (HPLC). All extracts were also performed antioxidant activity studies by DPPH and lipid peroxidation inhibition assays. The best extract was selected for stability study with heating-cooling condition and at room temperature for a month with light and dark conditions. Lycopene was only found in the E2 and E3 extracts by HPLC except the E1 extract. The low polar solvent has a better ability to extract resulting in the higher lycopene content. The E2 extract possessed the highest antioxidant activity by DPPH and lipid peroxidation inhibition assays that related to the highest lycopene content ($1.17 \pm 0.18 \mu\text{g}/1 \text{ mg}$ extract). The E2 extract was then selected for the stability test. The results showed that lycopene content was significantly decreased after heating-cooling condition and a few decreased after 1 month at room temperature with dark and light conditions.

In conclusion, the E2 extract exhibited the good antioxidant activity that will be useful for further application in cosmetic products. However, lycopene is sensitive to heat, light, oxygen and environmental condition which effect on its isomerization and oxidation [2]. Therefore, the stability of lycopene will be improved in further study with nanoparticle delivery system [3].

References

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