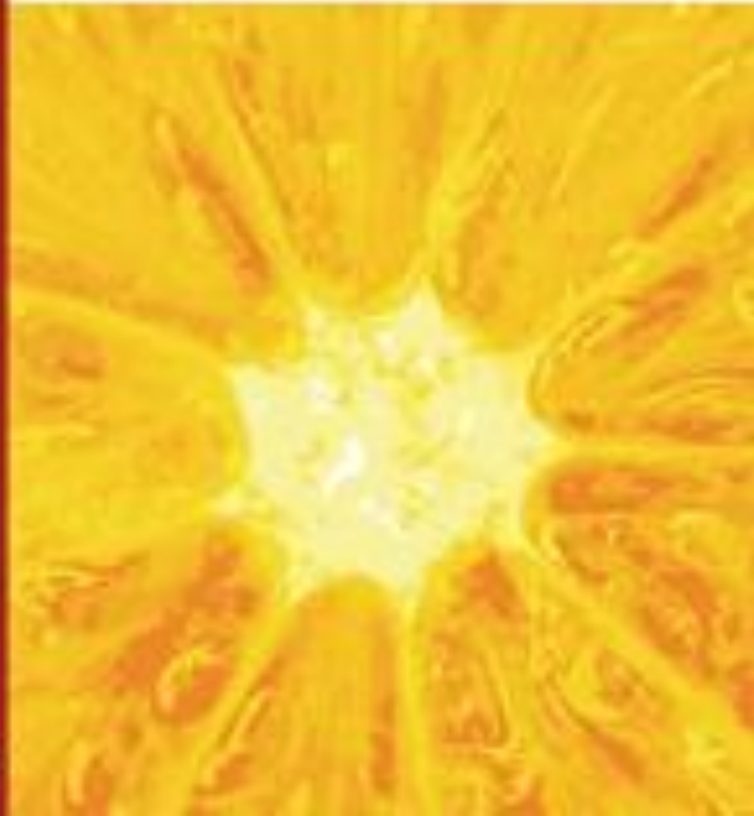


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 Brest
 France











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School of Medicine, Medical Sciences & Nutrition
Aberdeen Centre for Energy Regulation and Obesity
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Rajasthan
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Antioxidant Potency of Red Dragon Fruit Flesh and Peel Prepared by Different Methods

Novi Febrianti^{1,2}, Purwanti Pratiwi Purbosari², Triana Hertiani³, Sukarti Moeljopawiro⁴ and Sofia Mubarika Haryana^{5,*}

¹Department of Biotechnology, Graduate School, Universitas Gadjah Mada, Yogyakarta, Indonesia; ²Department of Biology Education, Faculty of Teacher Training & Education, Universitas Ahmad Dahlan, Yogyakarta; ³Department of Pharmaceutical Biology Faculty of Pharmacy, Universitas Gadjah Mada, Yogyakarta, Indonesia; ⁴Department of Biochemistry, Faculty of Biology, Universitas Gadjah Mada, Yogyakarta Indonesia; ⁵Department of Histology and Cell Biology, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada, Yogyakarta Indonesia

Abstract: Background: Red dragon fruit (*Hylocereus polyrhizus*, (F.A.C. Weber) Britton & Rose) is widely consumed all over the world nowadays. The peel and flesh of red dragon fruit contain many bioactive compounds with high antioxidant activity. The preparation process is critical to maximizing the yield of the antioxidant content.

Objective: The objectives of this research were to evaluate total phenolic content (TPC), total flavonoid content (TFC), as well as the antioxidant activity of peel and flesh of red dragon fruit prepared by various methods.

Methods: The fresh and dried samples of peel and flesh of red dragon fruit were prepared via maceration and non-maceration process. Ethanol (96%) was used as the solvent in maceration. In the non-maceration process, the samples were ground using a blender and pressed using a juicer. TPC was analyzed by Folin-Ciocalteu methods, while TFC was determined by spectrophotometry UV-Vis with AlCl₃. Antioxidant activity was analyzed by 2,2-diphenyl-1-picrylhydrazyl (DPPH) and β -carotene bleaching (BCB) tests.

Results: TPC from all of the measured samples varied from 22.43±0.27 to 80.54±0.43 mg GAE/g dry extract. The highest TPC concentration was found in the blended peel via maceration and the lowest concentration was found in the blended flesh without maceration. The dried peel via maceration treatment had the highest TFC (51.96±0.084 mg of QE/g dry extract). Regarding to the antioxidant activity, the blended flesh ethanolic extract and blended peel ethanolic extract had the highest DPPH radical scavenging, IC₅₀=966.83±11.62 and 973.81±3.571ppm, respectively. While the blended peel ethanolic extract had the highest BCB antioxidant activity (IC₅₀= 45.48±6.79 mg/mL).

Conclusion: Preparation methods affect the antioxidant activity of red dragon fruit peel and flesh. The highest TPC and antioxidant activity (BCB test) can be found in the ethanolic extract of the blended peel. The highest TFC can be found in the ethanolic extract of dried-peel. Both the ethanolic extracts, blended peel and blended flesh, had the same DPPH radical scavenging activity.

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Keywords: Antioxidant activity, flavonoid, natural health, phenol, preparation method, red dragon fruit.

1. INTRODUCTION

Red dragon fruit is one of the tropical fruits that are widely consumed all over the world. This fruit contains

many bioactive compounds, such as polyphenols, beta-carotene, flavonoids, and vitamins (B1, B2, B3, and C). According to a research [1], the primary pigment in red dragon fruit is betacyanin, which produces the purple color.

The high content of bioactive compounds in this fruit has driven researchers to explore its potency as a natural health supplement. The study showed the effectiveness of dragon fruit to decrease some metabolic syndrome symptoms [2].

*Address correspondence to this author at the Department of Histology and Cell Biology, Faculty of Medicine, Public Health, and Nursing Universitas Gadjah Mada, Yogyakarta Indonesia; Tel/Fax: +62 274 560 300, +62 274 581 876; E-mails: sofia.mubarika@gmail.com

higher than flavonoid content ($r = -0.410$ and $r = 0.394$, respectively). This result demonstrated that phenols and flavonoids did not give significant support to the antioxidant power of red dragon fruit samples based on this assay.

Overall, this study implies that the peel of red dragon fruit contains higher antioxidant properties compared to the flesh. The maceration process to the peel using dried and fresh fruit relatively resulted in slight differences in antioxidant capacity. Azwanida N reported that pre-extraction preparation of plant samples, as grinding and drying, influence the preservation of phytochemicals in the final extract [9]. The fresh or dried samples give different result in extraction yield. Matsusaka Y, Kawabata J reported that the inedible parts of a plant such as peel and seed had higher antioxidant capacity compared to the edible ones [20]

CONCLUSION

Preparation methods affect the antioxidant activity of red dragon fruit peel and flesh. The highest TPC and antioxidant activity (BCB test) can be found in the ethanolic extract of the blended peel. Both the ethanolic extracts, blended peel and blended flesh, had the same DPPH radical scavenging activity. The highest TFC can be found in the ethanolic extract of dried-peel.

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Not applicable.

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No Animals/Humans were used for studies that are base of this research.

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Not applicable.

AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article is available in the Repository UAD at <http://eprints.uad.ac.id/15740/>, [21].

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CONFLICT OF INTEREST

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