

## ABSTRACT

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### **UTILIZATION OF SUPER RED DRAGON FRUIT (*Hylocereus costaricensis* (F.A.C. Weber) Britton & Rose) PEEL IN THE MAKING OF FERMENTED BEVERAGE**

(xvi + 97 pages: 10 figures, 9 tables, and 16 appendices)

*Super red dragon fruit (*Hylocereus costaricensis*) peel has contain bioactive compounds and functional nutrients such as flavonoid, alkaloid, terpenoid, thiamin, niacin, pyridoxine, cobalamin, phenolic, polyphenol, carotene betalain. The aimed of this research was to produce fermented drink made from the super red dragon fruit (*Hylocereus costaricensis*) peel. Super red dragon fruit (*Hylocereus costaricensis*) peel fermented beverage was fermented by combination cultures of *Streptococcus thermophilus*, *Lactobacillus plantarum*, and *Lactobacillus bulgaricus*. The fermented beverage was processed by addition different concentration of super red dragon fruit peel powder (1, 1,5, and 2%) and different concentration of skim milk (5 and 10%). The product was fermented on 42°C for 14 hours. Fermented drink was analyzed by several physiochemical properties of the fermented drink includes pH, total titratable acidity, total lactic acid bacteria. This study showed that the concentration of super red dragon fruit peel powder 1% and skim milk 5% were the best formulation, that gave pH value of 4,07, total titratable acidity value of 0.74%, and total lactic acid bacteria of 8,86 log CFU/ml. The best formulation was tested with different ratio of lactic acid bacteria, such as *Streptococcus thermophilus*, *Lactobacillus plantarum*, and *Lactobacillus bulgaricus* (1:1:1, 1:1:2, 1:2:1, and 2:1:1). Ratio 1:1:1 of lactic acid bacteria gave pH value of 4,14, total titratable acidity value of 0,69%, and total lactic acid bacteria of 9,41 log CFU/ml. This formula also produce fermented beverage that contains total phenolic compound of 483,67 mgGAE/ml, total flavonoid compound of 315,59 mgQE/ml, and  $IC_{50}$   $39,94 \times 10^4$  mg/L. In conclusion, super red dragon fruit peel had antioxidant activity and over fermentation process can increase the antioxidant activity.*

Keywords: fermented beverage, super red dragon fruit peel, ratio of lactic acid bacteria, skim milk

References: 109 (1992-2016)