

Effect of Dragon Fruit Peel Kombucha Concentration and Carrageenan-Porang Glucomannan Ratio on the Physical, Chemical, and Sensory Properties of Jelly Candy

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ABSTRACT

Dragon fruit peel is an agricultural by-product containing bioactive compounds with the potential to be utilized as a functional food ingredient. Fermentation of dragon fruit peel into kombucha can increase its bioactive compounds; however, its acidic properties may affect gel formation in jelly candy. This study aimed to determine the effect of dragon fruit peel kombucha concentration and the carrageenan:porang glucomannan ratio on the physicochemical and organoleptic characteristics of jelly candy and to determine the best treatment. A factorial Completely Randomized Design (CRD) was used with two factors: dragon fruit peel kombucha concentration (10%, 15%, and 20%) and carrageenan:porang glucomannan ratio (2:1, 1:1, and 1:2), resulting in nine treatment combinations with three replications. Data were analyzed using Two-Way ANOVA, followed by Duncan's Multiple Range Test (DMRT) at a 5% significance level. The results showed that kombucha concentration, the carrageenan:porang glucomannan ratio, and their interaction significantly affected moisture content and texture. Kombucha concentration significantly affected pH, hedonic aroma, hedonic taste, and the hedonic quality of color and texture, while the carrageenan:porang glucomannan ratio significantly affected gel syneresis, texture, hedonic texture, and the hedonic quality of texture. The best treatment was A2B1 (15% dragon fruit peel kombucha and a 2:1 carrageenan:porang glucomannan ratio) with a moisture content of 17.80%, ash content of 0.46%, reducing sugar content of 2.74%, pH 5.30, texture 2.69 N, gel syneresis 1.62%, hedonic scores of 3.56 (aroma), 3.36 (taste), 3.80 (texture), and 3.92 (color). The antioxidant activity of dragon fruit peel kombucha was 8.95%, while the best jelly candy treatment showed an antioxidant activity of 3.72%, higher than the control (1.70%).

Keywords: *carrageenan, dragon fruit peel, jelly candy, kombucha, porang glucomannan*