

ABSTRAK

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**PEMANFAATAN BUAH NAGA MERAH (*Selenicereus monacanthus*),
UMBI BIT MERAH (*Beta vulgaris* L.), DAN SAYUR KOL UNGU (*Brassica oleracea* L.) SEBAGAI SUMBER PEWARNA ALAMI DALAM PERMEN GUMMY**

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(XVII + 96 halaman, 27 tabel, 24 gambar, 18 lampiran)

Permen *gummy* merupakan produk kembang gula bertekstur lunak yang diproses dengan penambahan komponen hidrokoloid (gelatin). Permen *gummy* umumnya menggunakan pewarna sintesis. Banyak sayur dan buah yang mengandung pigmen merah yang dapat digunakan sebagai pewarna alami, namun masih kurang dimanfaatkan. Penelitian ini bertujuan untuk memanfaatkan kandungan pigmen pada buah naga merah, umbi bit merah, dan sayur kol ungu sebagai sumber pewarna alami pada permen *gummy*. Penelitian ini terbagi menjadi dua tahap meliputi pembuatan sari bahan baku pada penelitian pendahuluan dan pembuatan permen *gummy* pada penelitian utama. Tiga rasio bahan baku: air digunakan pada penelitian pendahuluan (1:0.5, 1:1, 1:1.5) dan 3 jenis bahan baku (buah naga merah, bit merah, kol ungu) serta 4 konsentrasi sari (25, 50, 75, 100%) digunakan pada penelitian utama. Analisis warna, total fenolik, dan total padatan terlarut dilakukan terhadap sari bahan pada penelitian pendahuluan. Analisis kadar air, warna dan kestabilannya (*lightness* dan $^{\circ}\text{hue}$), total antioksidan, total fenolik, total gula pereduksi, tekstur (*hardness*, *gumminess*, *chewiness*), dan organoleptik dilakukan terhadap permen *gummy* yang dihasilkan pada penelitian utama. Hasil yang diperoleh menunjukkan rasio buah dan air 1:0.5 merupakan rasio terbaik dalam pembuatan sari buah untuk aplikasi permen *gummy*. Semakin tinggi konsentrasi sari buah yang digunakan, semakin stabil warna yang dihasilkan. Kestabilan warna terbaik diperoleh permen *gummy* dengan bit merah, sedangkan penerimaan hedonik keseluruhan di peroleh permen *gummy* yang menggunakan buah naga merah. Permen *gummy* yang paling stabil selama penyimpanan 3 minggu adalah permen *gummy* bit merah dengan konsentrasi sari 100% yang memiliki kadar air 30.49 ± 0.08 %, warna awal dengan *lightness* 22.34 ± 0.24 dan $^{\circ}\text{hue}$ 13.56 ± 0.15 , dan warna akhir setelah penyimpan 3 minggu dengan *lightness* 17.96 ± 10.24 (terpapar cahaya/terang), 12.63 ± 7.32 (gelap) dan 1.59 ± 1.57 (suhu kulkas $\pm 5^{\circ}\text{C}$), dengan $^{\circ}\text{hue}$ pada *range red purple* yang bertahan dari awal hingga akhir penyimpanan, total antioksidan 0.18 ± 0.00 mgAAE/ 100 g (*dry basis*), total fenolik 0.61 ± 0.04 mgGAE/100 g (*dry basis*), total gula pereduksi 15.50 ± 0.01 %, *hardness* 1082.11 ± 60.62 g, *gumminess* 938.7 ± 69.61 N, dan *chewiness* 921.97 ± 63.1 Nmm.

Kata kunci : Bit merah, buah naga merah, kol ungu, permen *gummy*, stabilitas warna

Referensi : 121 (1992-2023)

ABSTRACT

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UTILIZATION OF RED DRAGON FRUIT (*Selenicereus monacanthus*), RED BEETROOT (*Beta vulgaris* L.), AND PURPLE CABBAGE (*Brassica oleracea* L.) AS NATURAL DYE IN GUMMY CANDY

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Gummy candy is a soft-textured confectionery product processed with the addition of a hydrocolloid (gelatin). Gummy candy generally uses synthetic colouring. Many vegetables and fruits contain red pigment which can be used as natural colouring agents, but they are still underutilized. This research was aimed to utilize the pigment from red dragon fruit, red beetroot, and purple cabbage as the sources of natural coloring in gummy candy. This research was divided into two stages, including making raw material juice in the preliminary research and making gummy candy in the main research. Three ratios of raw materials: water were used in preliminary research (1:0.5, 1:1, 1:1.5) and 3 types of raw materials (red dragon fruit, red beet, purple cabbage) and 4 juice concentrations (25, 50, 75, 100%) were used in the main research. The color, total phenolics, and total dissolved solids of the juices were used as the parameter assessed in the preliminary research, while the moisture content, color, total antioxidants, total phenolics, total reducing sugars, texture (hardness, gumminess, chewiness), and organoleptics as well as the stability (lightness and hue) were used as the parameters to assess the gummy candy produced in the main research. The results showed that the fruit and water ratio of 1:0.5 was found as the best ratio in making fruit juice for gummy candy applications. The higher the concentration of fruit juice used, the more stable the resulting color was. The best color stability was obtained from the gummy candy using red beetroot, while the highest overall hedonic score was obtained from the gummy candy using red dragon fruit. After 3 weeks of storage, the most stable gummy candy was the one using 100% juice concentration of red beetroot which had moisture content of 30.49 ± 0.08 %, total antioxidants 0.18 ± 0.00 mgAAE/ 100 g (dry basis), total phenolics 0.61 ± 0.04 mgGAE/100 g (dry basis), total reducing sugars 15.50 ± 0.01 %, hardness 1082.11 ± 60.62 g, gumminess 938.7 ± 69.61 N, and chewiness 921.97 ± 63.1 Nmm. This prototype had the initial color with the lightness of 22.34 ± 0.24 and °hue 13.56 ± 0.15 , and the final color after 3 weeks of storage with the lightness 17.96 ± 10.24 (exposed to light), 12.63 ± 7.32 (in the dark) and 1.59 ± 1.57 (at the refrigerator temperature, ± 5 ° C), with the °hue in the range of red purple that lasts from the beginning to the end of the storage.

Keywords : Color stability, gummy candy, purple cabbage, red beetroot, red dragon fruit

References : 121 (1992-2023)