

## Pengaruh Penambahan Jahe Merah Terhadap Aktivitas Antioksidan, Antidiabetes, dan Tingkat Penerimaan Konsumen Minuman Herbal *Sargassum Polycystum*

### INTISARI

*Sargassum polycystum* merupakan rumput laut cokelat yang memiliki potensi bioaktivitas tinggi sebagai bahan baku minuman fungsional. Namun demikian, karakteristik aroma amis yang kuat pada *S. polycystum* menjadi kendala utama dalam penerimaan konsumen. Jahe merah (*Zingiber officinale* var. *rubrum*) memiliki potensi sebagai *masking agent* untuk menutupi aroma amis sekaligus meningkatkan aktivitas antioksidan dan antidiabetes produk. Penelitian ini bertujuan untuk mengetahui pengaruh penambahan jahe merah terhadap aktivitas antioksidan, antidiabetes, dan tingkat penerimaan konsumen pada minuman herbal *S. polycystum*, serta menentukan konsentrasi penambahan jahe merah yang optimal berdasarkan ketiga parameter tersebut. Penetapan rentang konsentrasi perlakuan dilakukan melalui uji *threshold*, kemudian didapatkan rentang konsentrasi jahe merah yang digunakan dalam penelitian ini, yaitu P0 (0%), P1 (5%), P2 (8%), P3 (11%), dan P4 (14%). Parameter yang diuji meliputi rendemen, kadar air, total fenol, aktivitas antioksidan berdasarkan IC<sub>50</sub> DPPH dan kapasitas reduksi FRAP, aktivitas antidiabetes berdasarkan IC<sub>50</sub>  $\alpha$ -amilase dan  $\alpha$ -glukosidase, serta uji hedonik terhadap atribut warna, aroma, rasa, dan penerimaan keseluruhan. Penambahan jahe merah memberikan pengaruh signifikan terhadap rendemen, kadar total fenol, aktivitas antioksidan, aktivitas antidiabetes, dan tingkat penerimaan konsumen, namun tidak berpengaruh signifikan terhadap kadar air. Formulasi optimal diperoleh pada P3 (11%) dengan rendemen 24,34 $\pm$ 0,37%, kadar air 1,42 $\pm$ 0,06%, kadar total fenol 13,45 $\pm$ 0,57 mg GAE/g, IC<sub>50</sub> DPPH 183,54 $\pm$ 1,42  $\mu$ g/mL, kapasitas reduksi FRAP 22,74 $\pm$ 0,71 mM Fe<sup>2+</sup>/g, IC<sub>50</sub>  $\alpha$ -amilase 127,98 $\pm$ 0,84  $\mu$ g/mL, IC<sub>50</sub>  $\alpha$ -glukosidase 314,95 $\pm$ 1,42  $\mu$ g/mL, serta skor hedonik warna, aroma, rasa, dan keseluruhan berturut-turut 4,05 $\pm$ 1,02, 3,95 $\pm$ 1,14, 3,95 $\pm$ 1,23, dan 3,53 $\pm$ 0,74. Penelitian ini menunjukkan bahwa minuman herbal *S. polycystum* dengan penambahan jahe merah berpotensi dikembangkan sebagai produk minuman fungsional dengan aktivitas antioksidan dan antidiabetes yang dapat mendukung kesehatan masyarakat.

Kata kunci: *Sargassum polycystum*, jahe merah, antioksidan, antidiabetes, minuman fungsional, uji hedonik

## Effects of Red Ginger Addition on Antioxidant and Antidiabetic Activities and Consumer Acceptance of *Sargassum polycystum* Herbal Beverage

### ABSTRACT

*Sargassum polycystum* is a brown seaweed with high bioactive potential as a raw material for functional beverages. However, the strong fishy odor characteristic of *S. polycystum* represents a major obstacle to consumer acceptance. Red ginger (*Zingiber officinale* var. *rubrum*) has potential as a *masking agent* to reduce the fishy odor while simultaneously enhancing the product's antioxidant and antidiabetic activities. This study aimed to evaluate the effect of red ginger addition on antioxidant activity, antidiabetic activity, and consumer acceptance of an *S. polycystum* herbal beverage, as well as to determine the optimal red ginger concentration based on these three parameters. The range of treatment concentrations was determined using a *threshold* test, resulting in the red ginger concentrations used in this study: P0 (0%), P1 (5%), P2 (8%), P3 (11%), and P4 (14%). The evaluated parameters included yield, moisture content, total phenolic content, antioxidant activity based on DPPH IC<sub>50</sub> and FRAP reducing capacity, antidiabetic activity based on  $\alpha$ -amylase IC<sub>50</sub> and  $\alpha$ -glucosidase IC<sub>50</sub>, and hedonic testing of color, aroma, taste, and overall acceptance. Red ginger addition significantly affected yield, total phenolic content, antioxidant activity, antidiabetic activity, and consumer acceptance, but did not significantly affect moisture content. The optimal formulation was P3 (11%), with a yield of 24.34 $\pm$ 0.37%, moisture content of 1.42 $\pm$ 0.06%, total phenolic content of 13.45 $\pm$ 0.57 mg GAE/g, DPPH IC<sub>50</sub> of 183.54 $\pm$ 1.42  $\mu$ g/mL, FRAP reducing capacity of 22.74 $\pm$ 0.71 mM Fe<sup>2+</sup>/g,  $\alpha$ -amylase IC<sub>50</sub> of 127.98 $\pm$ 0.84  $\mu$ g/mL,  $\alpha$ -glucosidase IC<sub>50</sub> of 314.95 $\pm$ 1.42  $\mu$ g/mL, and hedonic scores for color, aroma, taste, and overall acceptance of 4.05 $\pm$ 1.02, 3.95 $\pm$ 1.14, 3.95 $\pm$ 1.23, and 3.53 $\pm$ 0.74, respectively. These findings indicate that an *S. polycystum* herbal beverage fortified with red ginger has potential to be developed as a functional beverage with antioxidant and antidiabetic activities that may support public health.

**Keywords:** *Sargassum polycystum*, red ginger, antioxidant, antidiabetic, functional beverage, hedonic test