

Kadar Glutamat, Kadar Protein, serta Aktivitas Antioksidan Kaldu Bubuk Karapas Udang Vannamei (*Litopenaeus vannamei*) dengan Penambahan Tepung Tulang Ikan Tongkol (*Euthynnus affinis*) dan Bubuk Tinta Cumi (*Loligo sp.*)

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ABSTRAK

Latar Belakang: Seiring dengan meningkatnya jumlah limbah hasil perikanan di Indonesia dan adanya persepsi negatif konsumen terhadap MSG, diperlukan produk yang dapat menggantikan MSG sekaligus menjadi alternatif untuk mengurangi limbah hasil perikanan. Salah satu produk yang dapat menyelesaikan kedua masalah tersebut adalah kaldu bubuk yang dibuat dengan bahan limbah seperti karapas udang, tulang ikan, dan tinta cumi-cumi.

Tujuan: Menganalisis kadar glutamat, kadar protein, serta aktivitas antioksidan kaldu bubuk dengan bahan kulit udang vannamei, tulang ikan tongkol, dan tinta cumi.

Metode: Penelitian eksperimental dengan percobaan acak lengkap satu faktor, yaitu penambahan tepung tulang ikan tongkol dan bubuk tinta cumi-cumi dengan formulasi berbeda. Penelitian eksperimen ini terdiri dari satu kelompok kontrol (tanpa penambahan tepung tulang ikan tongkol dan tinta cumi-cumi) serta tiga kelompok dengan perlakuan Bubuk Karapas Udang (BKU):Tepung Tulang Ikan (TTI):Bubuk Tinta Cumi (BTC), yaitu F1 (50%:30%:20%), F2 (50%:20%:30%), F3 (50%:25%:25%). Kadar glutamat diuji dengan metode *ninhydrin spectrophotometry*, protein dengan metode kjeldahl, serta aktivitas antioksidan dengan metode DPPH. Analisis statistik menggunakan uji *Shapiro-Wilk* (uji normalitas), uji *One-way anova* dan uji *tukey* (sebagai uji lanjut), serta uji *Kruskall-Wallis* dan uji *Dunn-Bonferroni*.

Hasil: Penambahan tepung tulang ikan tongkol dan bubuk tinta cumi-cumi berpengaruh signifikan terhadap kadar glutamat, kadar protein, dan aktivitas antioksidan kaldu bubuk. Hasil rerata asam glutamat secara berurutan yaitu 27,13 (26,35-27,88)%; 20,28 (19,89-21,46)%; 19,47 (16,10-19,92)%; dan 20,94 (20,79-21,36)%. Hasil protein secara berurutan yaitu 24,25±0,44%; 25,85±0,17%; 28,34±0,20%; dan 27,47±0,23%. Hasil aktivitas antioksidan secara berurutan yaitu 6689,32 (6563,37-6969,17) ppm; 4749,41 (4478,39-4977,35) ppm; 4201,67 (4033,09-4269,47) ppm; dan 3525,94 (3390,48-3558,55) ppm.

Kesimpulan: Terdapat perbedaan pada kadar glutamat, kadar protein, dan aktivitas antioksidan kaldu bubuk akibat penambahan tepung tulang ikan tongkol dan bubuk tinta cumi-cumi. Diperlukan penelitian selanjutnya untuk menentukan konsentrasi optimal dari senyawa yang diuji sehingga diharapkan bisa merancang formulasi yang lebih efektif.

Kata Kunci: Kaldu Bubuk, Glutamat, Protein, Aktivitas Antioksidan, Limbah Perikanan

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Glutamic Acid Content, Protein Content, and Antioxidant Activity of Powdered Stock from Pacific White Shrimp (*Litopenaeus Vannamei*) Carapace with Little Tuna (*Euthynnus Affinis*) Fishbone Flour and Squid (*Loligo Sp.*) Ink Powder

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ABSTRACT

Background: Along with the increasing amount of fishery waste in Indonesia and the negative perception of consumers toward MSG, there is a need for a product that can replace MSG while also serving as an alternative to reduce fishery waste. One product that can address both issues is powdered stock made from waste materials such as shrimp shells, fish bones, and squid ink.

Objective: This study aims to analyze the glutamate content, protein content, and antioxidant activity of powdered stock made from vannamei shrimp shells, tuna bones, and squid ink.

Methods: This experimental study used a completely randomized design with one factor, namely the addition of little tuna bone flour and squid ink powder in different. This experimental study consists of one control group (without the addition of little tuna fish bone flour and squid ink) and three groups with treatments of Shrimp Shell Powder (BKU): Fish Bone flour (TTI): Squid Ink Powder (BTC), namely F1 (50%:30%:20%), F2 (50%:20%:30%), F3 (50%:25%:25%). Glutamic acid content were tested using the Ninhydrin Spectrophotometry method, protein content with the Kjeldahl method, and antioxidant activity with the DPPH method. Statistical analysis was conducted using the Shapiro-Wilk test (normality test), One-way ANOVA and Tukey's test (as post-hoc test), as well as the Kruskal-Wallis test and Dunn-Bonferroni test (as post-hoc test).

Result: The addition of little tuna bone flour and squid ink powder had a significant effect on the glutamate content, protein content, and antioxidant activity of the powdered stock. The average glutamate levels were 27,13 (26,35-27,88)%; 20,28 (19,89-21,46)%; 19,47 (16,10-19,92)%; and 20,94 (20,79-21,36)%, respectively. The protein levels were 24,25±0,44%; 25,85±0,17%; 28,34±0,20%; and 27,47±0,23%, respectively. The antioxidant activity results were 6689,32 (6563,37-6969,17) ppm; 4749,41 (4478,39-4977,35) ppm; 4201,67 (4033,09-4269,47) ppm; and 3525,94 (3390,48-3558,55) ppm, respectively.

Conclusion: There are differences in glutamate content, protein content, and antioxidant activity of the powdered stock due to the addition of little tuna fish bone flour and squid ink powder. Further research is needed to determine the optimal concentration of the tested compounds, which is expected to help design a more effective formulation

Keywords: Powdered Stock, Glutamic Acid, Protein, Antioxidant Activity, Fishery Waste

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