

ABSTRAK

EVALUASI PERLAKUAN AWAL PLASMA DINGIN *DIELECTRIC BARRIER DISCHARGE* (DBD) PADA PRODUK BAKSO IKAN NILA

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ABSTRAK

Indonesia sebagai negara kepulauan memiliki potensi besar di sektor perikanan yang ditandai dengan peningkatan produksi dan konsumsi ikan setiap tahunnya. Salah satu produk olahan yang cukup diminati adalah bakso ikan, khususnya berbahan dasar ikan nila karena teksturnya yang kenyal, rasa gurih, dan proses pembuatan yang relatif sederhana. Meski demikian, bakso ikan memiliki tantangan dalam hal masa simpan yang pendek serta risiko penggunaan bahan pengawet berbahaya seperti boraks dan formalin. Beberapa metode pengawetan yang sering digunakan yaitu penambahan kimia berbahaya yang membahayakan kesehatan manusia dan pembekuan yang berisiko *freezer burn*. Guna menjawab permasalahan tersebut, teknologi plasma dingin ditawarkan sebagai metode pengawetan alternatif yang ramah lingkungan. Plasma dingin merupakan metode *non-thermal* yang efektif menurunkan jumlah mikroba tanpa merusak kualitas sensoris dan nutrisi produk. Penelitian ini bertujuan untuk mengevaluasi pengaruh aplikasi plasma dingin berbasis *Dielectric Barrier Discharge* (DBD) dengan variasi waktu 1, 3, 5, dan 7 menit terhadap penurunan mutu bakso ikan nila. Penyimpanan bakso ikan dilakukan selama 12 hari pada refrigerator. Parameter yang dievaluasi selama penyimpanan meliputi *Thiobarbituric Acid Reactive Substance* (TBARs), kadar air, Angka Lempeng Total (ALT), dan warna (L, a, b). Hasil penelitian menunjukkan bahwa perlakuan plasma dingin DBD berpengaruh signifikan ($p < 0,05$) terhadap nilai TBARs selama penyimpanan, sementara kadar air hanya dipengaruhi signifikan ($p < 0,05$) oleh lama penyimpanan, bukan perlakuan plasma. Semakin lama waktu aplikasi plasma DBD pada bakso ikan menunjukkan semakin efektif menekan Angka Lempeng Total, meskipun efektivitasnya masih di bawah penambahan natrium benzoat. Selain itu, faktor perlakuan plasma dingin tidak berpengaruh signifikan ($p < 0,05$) terhadap nilai warna (L, a, b). Namun faktor lama penyimpanan berpengaruh signifikan ($p < 0,05$) pada nilai L dan a.

Kata kunci: Bakso Ikan, Pengawetan, Plasma *Dielectric Barrier Discharge*

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ABSTRACT

EVALUATION OF COLD PLASMA DIELECTRIC BARRIER DISCHARGE (DBD) PRE-TREATMENT ON NILE TILAPIA FISH MEATBALL PRODUCTS

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ABSTRACT

Indonesia as an archipelagic country has great potential in the fisheries sector, which is marked by an increase in fish production and consumption every year. One of the processed products that is quite popular is fish meatballs, especially those made from tilapia because of their chewy texture, savory taste, and relatively simple manufacturing process. However, fish meatballs have challenges in terms of short shelf life and the risk of using hazardous preservatives such as borax and formalin. Some preservation methods that are often used are the addition of hazardous chemicals that are harmful to human health and freezing which risks freezer burn. In order to answer these problems, cold plasma technology is offered as an alternative environmentally friendly preservation method. Cold plasma is a non-thermal method that is effective in reducing the number of microbes without damaging the sensory and nutritional quality of the product. This study aims to evaluate the effect of cold plasma applications based on Dielectric Barrier Discharge (DBD) with time variations of 1, 3, 5, and 7 minutes on the decline in the quality of tilapia fish meatballs. Fish meatballs were stored for 12 days in the refrigerator. Parameters evaluated during storage included Thiobarbituric Acid Reactive Substance (TBARs), water content, Total Plate Count (TPC), and color (L, a, b). The results showed that cold plasma treatment of DBD had a significant effect ($p < 0.05$) on the TBARs value during storage, while water content was only significantly affected ($p < 0.05$) by the storage period, not plasma treatment. The longer the application time of DBD plasma on fish meatballs showed the more effective it was in suppressing the Total Plate Count, although its effectiveness was still below the addition of sodium benzoate. In addition, the cold plasma treatment factor did not have a significant effect ($p < 0.05$) on the color value (L, a, b). However, the storage period factor had a significant effect ($p < 0.05$) on the L and a values.

Keywords: Fish balls, Preservation, Dielectric Barrier Discharge Plasma

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