

## RINGKASAN

Ikan lele merupakan salah satu komoditas perikanan yang memiliki kandungan protein tinggi, namun ikan lele mudah mengalami penurunan mutu selama penyimpanan akibat perubahan fisik dan kimia yang terjadi pada jaringan daging. Karakteristik fisikokimia seperti tekstur, kadar air, protein terlarut, dan protein total merupakan parameter penting yang dapat digunakan untuk mengevaluasi kualitas produk ikan asap selama penyimpanan. Penggunaan asap cair tempurung kelapa dalam proses pengasapan serta penyimpanan beku diharapkan mampu mempertahankan karakteristik fisikokimia ikan lele asap. Oleh karena itu penelitian ini bertujuan untuk mengetahui pengaruh lama penyimpanan beku terhadap karakteristik fisikokimia ikan lele asap yang diolah menggunakan asap cair tempurung kelapa dengan konsentrasi 10%.

Penelitian ini menggunakan metode eksperimen laboratorium dengan Rancangan Acak Lengkap (RAL). Bahan baku yang digunakan merupakan ikan lele dengan ukuran panjang  $\pm 27$  cm dan bobot  $\pm 133$  gram. Proses pengasapan dilakukan menggunakan asap cair tempurung kelapa konsentrasi 10% dengan metode perendaman selama 1 jam, kemudian dilanjutkan dengan proses pemanasan bertahap menggunakan oven pada suhu 40-45°C, 50-55°C, dan 60-65°C masing-masing selama 1 jam. Sampel ikan lele asap kemudian disimpan pada suhu beku selama 21 hari dengan pengamatan pada hari ke-0; 7; 14; dan 21. Parameter yang dianalisis meliputi tekstur, kadar air, kadar protein terlarut, dan kadar protein total. Data hasil penelitian dianalisis menggunakan uji ANOVA untuk mengetahui pengaruh perlakuan terhadap parameter yang diamati.

Hasil penelitian menunjukkan bahwa aplikasi asap cair tempurung kelapa selama penyimpanan beku (0, 7, 14, dan 21 hari) memberikan pengaruh yang nyata ( $P < 0,05$ ) terhadap kadar protein dan kadar protein terlarut, akan tetapi tidak berpengaruh nyata ( $P > 0,05$ ) terhadap kadar air. Nilai tekstur mengalami penurunan selama masa penyimpanan yang ditandai dengan menurunnya *hardness*, *gumminess*, *fracture*, dan *chewiness* akibat kerusakan struktur jaringan dan denaturasi protein selama pembekuan. Kadar air mengalami peningkatan dari 58,44% pada hari ke-0 menjadi 59,80% pada hari ke-21, namun masih memenuhi standar mutu ikan asap berdasarkan SNI 2725:2013 dengan batas maksimum kadar air sebesar 60%. Kadar protein terlarut mengalami penurunan dari 1,43% menjadi 1,04% selama penyimpanan akibat denaturasi dan agregasi protein selama pembekuan. Kadar protein total mengalami peningkatan dari 12,78 pada hari ke-0 menjadi 14,62% di hari ke-21. Secara keseluruhan, penggunaan asap cair tempurung kelapa dengan konsentrasi 10% dan penyimpanan beku mampu membantu mempertahankan mutu fisikokimia ikan lele asap selama penyimpanan 21 hari.

**Kata kunci :** Asap cair tempurung kelapa; Fisikokimia; Ikan lele; Penyimpanan beku.

## SUMMARY

Catfish is a fishery product with a high protein content; however, it is prone to quality deterioration during storage due to physical and chemical changes in its flesh. Physicochemical characteristics such as texture, moisture content, soluble protein, and total protein are important parameters for evaluating the quality of smoked catfish products during storage. The use of coconut shell liquid smoke in the smoking process and frozen storage is expected to preserve the physicochemical characteristics of smoked catfish. Therefore, this study aims to determine the effect of frozen storage duration on the physicochemical characteristics of smoked catfish processed using 10% coconut shell liquid smoke.

This study employed a laboratory experimental method using a completely randomized design (CRD). The raw material used was catfish measuring approximately 27 cm in length and weighing approximately 133 grams. The smoking process was carried out using 10% concentration coconut shell liquid smoke via the immersion method for 1 hour, followed by a gradual heating process in an oven at temperatures 40–45°C, 50–55°C, and 60–65°C, each for 1 hour. The smoked catfish samples were then stored at freezing temperatures for 21 days, with observations taken on days 0, 7, 14, and 21. The parameters analyzed included texture, moisture content, soluble protein content, and total protein content. The research data were analyzed using an ANOVA test to determine the effect of the treatments on the observed parameters.

The results of the study showed that the application of coconut shell liquid smoke during frozen storage (0, 7, 14, and 21 days) had a significant effect ( $P < 0.05$ ) on protein content and soluble protein content, but no significant effect ( $P > 0.05$ ) on moisture content. Texture values decreased during storage, as indicated by reductions in hardness, gumminess, fracture, and chewiness due to tissue structural damage and protein denaturation during freezing. Moisture content increased from 58.44% on day 0 to 59.80% on day 21, yet it still met the quality standards for smoked fish according to SNI 2725:2013, which sets a maximum moisture content limit of 60%. Soluble protein content decreased from 1.43% to 1.04% during storage due to protein denaturation and aggregation during freezing. Total protein content increased from 12.78% on day 0 to 14.62% on day 21. Overall, the use of 10% coconut shell liquid smoke and frozen storage helped maintain the physicochemical quality of smoked catfish during 21 days of storage.

**Keywords:** Coconut shell liquid smoke; Physicochemical properties; Catfish; Frozen storage.