

INTISARI

ELECTRONIC NOSE TERKOPEL DENGAN SISTEM KEMOMETRIK UNTUK ANALISIS AROMA IKAN BERFORMALIN

RENGGANIS PUTRI PARMUDYA

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Pengawetan ikan menggunakan formalin sering ditemukan yang berbahaya apabila dikonsumsi manusia. Telah dilakukan penelitian tentang uji formalin terhadap ikan nila merah menggunakan *electronic nose*. Sampel yang digunakan adalah ikan nila merah non formalin (FN), ikan nila merah berformalin 3% (FR), dan ikan nila merah berformalin 37% (FT). Ikan dipotong fillet sebesar 2,5 gram yang disimpan selama 5 hari di dalam suhu kamar. Data keluaran *e-nose* dianalisis dengan *Principle Component Analysis (PCA)* dan *Linear Discriminant Analysis (LDA)*. Pada penelitian ini menggunakan tiga ekstraksi ciri yaitu *difference time set value (F1)*, *maximum value (F2)*, dan *time set value (F3)*, hasil analisis paling baik digunakan untuk analisis pergeseran aroma ikan selama penyimpanan 5 hari. Semua hasil analisis PCA sudah dapat memisah kelas dengan baik. Sedangkan LDA memisahkan kelas lebih baik dari PCA. Akurasi dari hasil analisis LDA menggunakan ekstraksi ciri *F1*, *F2*, dan *F3* berturut-turut adalah 70,9%, 80,4% dan 82,2%. Hasil analisis LDA menggunakan ekstraksi *F3* digunakan untuk menganalisis pergeseran aroma. Apabila penelitian ini dapat dikembangkan dengan baik maka pengontrolan kualitas ikan nila dapat menggunakan *e-nose* dalam mengetahui kerusakan atau pembusukan ikan dari profil aroma ikan.

Kata kunci: *electronic nose, feature extraction, linear discriminant analysis*, ikan berformalin, pembusukan ikan

ABSTRACT

ELECTRONIC NOSE COUPLED WITH CHEMOMETRIC SYSTEM FOR ANALYSING AROMA OF FISH WITH FORMALIN

RENGGANIS PUTRI PARMUDYA

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Preservation of fish using formalin is often found which dangerous if consumed by humans. Research has been conducted on testing red tilapia with formalin using electronic nose. The samples were non formalin red tilapia (FN), red tilapia with 3% formalin (FR), and red tilapia with 37% formalin (FT). Fish was cut by 2.5 grams of fillets which were stored for 5 days at room temperature. E-nose output data were analyzed by Principle Component Analysis (PCA) and Linear Discriminant Analysis (LDA). In this study used three feature extractions were named difference time set value (F1), maximum value (F2), and time set value (F3), the best results of the analysis were used to analyzing shifts of fish aroma during 5 days of storage. All PCA analysis results could separate the classes properly. Whereas LDA separated the classes better than PCA. The accuracy of the results of the LDA analysis used feature extraction F1, F2, and F3 were 70.9%, 80.4% and 82.2% respectively. The results of the LDA analysis used F3 extraction were used to analyzing the shift of aroma. If this research could be developed properly then controlling the fish quality can use e-nose in knowing the spoiled fish or decay from fish aroma profiles.

Keywords: *electronic nose, feature extraction, linear discriminant analysis, fish with formalin, spoiled fish*