DESIGN AND CONSTRUCTION OF ELECTRONIC NOSE DETECTION OF MIXED PORK IN BEEF USING ARDUINO-BASED BACKPROPAGATION ARTIFICIAL NEURAL NETWORK METHOD

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ABSTRACT

Beef is one of the needs of the community which has increased from year to year, especially on holidays or big day celebrations. The increasing market demand for beef is exploited by irresponsible parties to gain profits by mixing beef with pork which is cheaper. Therefore, an electronic nose device was made that can test fresh meat samples based on aroma in order to detect the mixture of pork in beef. The method used is a backpropagation Artificial Neural Network (ANN) in the MATLAB application which is trained to classify the aroma data of meat samples obtained from gas sensors TGS2602, TGS2620, TGS2610 and TGS2611, so that it can be seen which samples contain pork and which do not. There were 4 kinds of meat samples tested, namely pure beef and mixed beef with a percentage of pork content of 25%, 50% and 75%. The prototype test was carried out on 15 pure beef samples and 15 mixed beef samples with the results of 100% accuracy, precision, sensitivity and specificity values and 0% error.

Keywords: Backpropagation, Pork, Beef, Electronic Nose, Gas Sensor