



An Intelligent of ANN towards Agarwood Oil compounds pre-processing based on stepwise regression method to improve the oil quality

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Abstract—This paper presents the performance of Artificial Neural Network (ANN) application towards the agarwood oil quality classification. The works involved the selected of agarwood oil compounds based on a feature selection technique. The compounds are selected based on using Stepwise Regression technique. The compounds identified by stepwise regression are β -agarofuran, γ -Eudesmol, Longifolol, and Eudesmol. These compounds are fed into ANN as input feature and the output is the quality of the oil either high and low. Three classifier algorithms; Scaled Conjugate Gradient (SCG), Levenberg Marquardt (LM) and Resilient Backpropagation (RBP) and ten hidden neurons in the hidden layer are implemented. The performance of ANN is measured using confusion matrix, mean square error (mse) value and number of epoch. The finding showed that the ANN using four compounds of agarwood oil as input features obtained good performance with a good accuracy, lower mse value and lower number of epoch in one hidden neuron.

Keywords—*artificial neural network, stepwise regression, confusion matrix, mse, epoch*