Selection of feature analysis electronic nose signals based on the correlation between gas sensor and herbal phytochemical

ABSTRACT

Background: Electronic nose consists of commercial gas sensor which detects gas through an increase in electrical conductivity when reducing gases are adsorbed on the sensor's surface. The election of the best gas sensor that suits to the target gas detection is very crucial in order to capture the desired signal to be used in further process to design e-nose for odor detection with high rate of classification. In this study, five herbs were chosen as sample for electronic nose development. The volatile chemical compound in herbs as the source of the odor will be characterized by using gas chromatography–mass spectrometry test. The result of the test is useful to determine the potential gas sensor for e-nose. The process is followed by one to five feature analysis of the e-nose signal to find the best gas sensor array. Objective: The selection of gas sensors is investigated in order to design e-nose for odor detection. Results Feature analysis shows that five feature analyses by using five types of gas sensor for e-nose give the best result as the 90% accuracy of classification. Conclusion: Five types of gas sensors have been determined from the phytochemical's results of GCMS test. Hence, it will be used as sensor array in e-nose application for herbs classification.

Keyword: Gas sensor; Electronic nose; Gas chromatography-mass spectrometry; Herbs classification