

# Collaborative analysis on difference of apple fruits flavour using electronic nose and electronic tongue

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## Abstract

The flavour difference and other quality indicators among five popular apple varieties ('Ralls', 'Jonagold', 'Orin', 'Indo', and 'Hanfu') were evaluated mainly using electronic nose and electronic tongue coupled with gas chromatography-mass spectrometry (SPME/GC-MS). By linear discriminant analysis (LDA) of E-nose output data, the aroma of 'Orin' was found to be quite different from other varieties. There were obvious differences on sourness, saltiness, and umami among the five apple varieties in E-tongue analysis. For five apple varieties, 45 volatile compounds were identified, and their respective concentrations quantified using SPME/GC-MS, and which showed that, the most abundant volatile compounds in apples were esters. By principal component analysis (PCA), hexyl butanoate, (E)-2-hexenal and  $\alpha$ -farnesene were the important volatile compounds in apples. The hierarchical cluster analysis (HCA) according electronic nose and electronic tongue analysis and other quality indicators showed that the flavour of 'Hanfu' was closely related to 'Jonagold', while 'Indo' and 'Ralls' flavour were closely related to 'Orin'. The collaborative analysis method of combining electronic nose and electronic tongue had potential significance on flavor difference evaluation.