电子鼻技术在茶叶品质检测中的应用研究

作 者：于慧春1，2　　王　俊1，*

单 位：（1 浙江大学生物系统工程与食品科学学院，　杭州 310029；　2　河南科技大学食品与生物系统工程学院，洛阳　471003）

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摘　要：

以电子鼻作为检测手段，对同类不同等级的茶叶、茶水和茶底挥发性成分进行检测，并对采集到的数据进行分析。首先通过主成分分析进行特征提取来压缩数据维数，减少数据计算量，进而优化特征向量。然后采用线性判别和BP神经网络的方法对茶叶的不同等级进行分类判别。结果显示，误判样本都发生在T60和T100之间，两种判别方法结果比较一致。相对于茶叶和茶底，以各等级茶水为研究对象时，两种方法对茶叶品质等级的判别及测试结果相对都比较好。

关键词：茶叶；电子鼻；主成分分析；线性判别；BP神经网络

Tea quality detection basic on electronic nose

Author's Name: YU Huichun1,2, WANG Jun1

Institution: 1 Department of Biosystems Engineering, Zhejiang University, 268 Kaixuan Road, Hangzhou 310029, P R China 2 Food and Bioengineering Department, Henan University of Science and Technology, 48, Xiyuan Road, Luoyang, 471003, P R China

Abstract:

The electronic nose (e-nose) was applied in the tea quality classification, the volatile components of dry tea leaf, tea beverage and wet tea leaf (the dry tea leaf was brewed up, the water and the wet tea leaf were separated) were detected by the e-nose. The collected data were analyzed by principle components analysis (PCA) in order to reduce data dimension and optimize feature vectors. The linear discrimination analysis (LDA) and BP-neural network were applied in discrimination of different tea quality. The results showed that the results of LDA and BP-neural network were accordant, and only some samples of the tea T60 and the tea T100 were classified incorrectly. The analytical result of the tea beverage was better than those of dry tea leaf and wet tea leaf using the two methods.

Keywords: tea, electronic nose, principle components analysis, linear discrimination analysis, BP-neural network

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