

基于电子鼻技术的花椒品种鉴别方法研究

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摘要：

本文针对不同花椒品种的快速鉴别方法进行研究，以花椒的气味信息检测为研究对象，利用自行研制的电子鼻系统采集了6类花椒样品气味数据，对这些数据样本进行特征提取，得到了56组训练样本和32组测试样本。利用BP神经网络、概率神经网络和支持向量机对特征数据进行鉴别，正确识别率分别为89.58%、93.23%、94.27%，相对于BP神经网络和概率神经网络识别，支持向量机具有更好的分类效果。本文研制的电子鼻系统能无损、快速、准确鉴别花椒的品种，为农产品无损检测的研究提供了一种新的思路。

关键词：花椒，电子鼻，BP网络，概率神经网络，支持向量机

Study on the identification method of Zanthoxylum Bungeanum varieties based on electronic nose technology

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Abstract:

A fast identification method of Zanthoxylum Bungeanum varieties was studied in this paper. The smell information detection of Zanthoxylum Bungeanum was as a research object, and the odor data of 6 varieties were collected by the electronic nose system. The feature of these data were extracted, the 56 groups training samples and 32 groups testing samples were obtained. The feature data were classified by the BP neural network, probabilistic neural network, and support vector machine respectively, and the rate of identification was 89.58%, 93.23%, 94.27%. Compared to the BP neural network and probabilistic neural networks, support vector machine has better classification results. The electronic nose system developed in this paper can achieve the purpose of identifying Zanthoxylum Bungeanum species non-destructively, rapidly and accurately, which provides a new way for agricultural products nondestructive testing research.

Keywords: Zanthoxylum Bungeanum, electronic nose, BP network, probabilistic neural network, support vector machine

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