Variety Identification of Grape Juice Based on Imaging Spectral Data

Yi Cen (1), Linshan Zhang (1), Xuejian Sun (1), Lifu Zhang(1)

[1] Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
20 Datun Road, Chaoyang District, Beijing 100101, China
Email: cenyi@radi.ac.cn

Abstract: Grape juice，known as plant milk，contains more complex iron elements, whose glucose can be directly digested and absorbed by the human body to alleviate hypoglycemia. At present, the commonly used methods of juice identification include physical and chemical detection, as well as spectral detection technology developed in recent years. Most of these methods are carried out in the laboratory, whose experimental process is tedious, and a large number of data processing and analysis need to be carried out with complex algorithms in the later period. In view of the market demand for rapid and non-destructive identification of grape juice, 10 kinds of grape juice and Xinjiang fresh grape juice are used as the research object, and the image data of 11 kinds of grape juice were obtained by Head Wall imaging spectrometer. Three classification methods, such as Random Forest (RF)，Support Vector Machine(SVM) and Subspace K-near neighbor(Subspace KNN), were used to classify 11 kinds of grape juice. The results of this study can provide a basis for fast and non-destructive identification of grape juice, which is expected to be widely applied in real time and rapid detection of fruit juice.

Keywords: Grape juice; Variety identification; Imaging spectroscopy; Hyperspectral remote sensing; Image classification