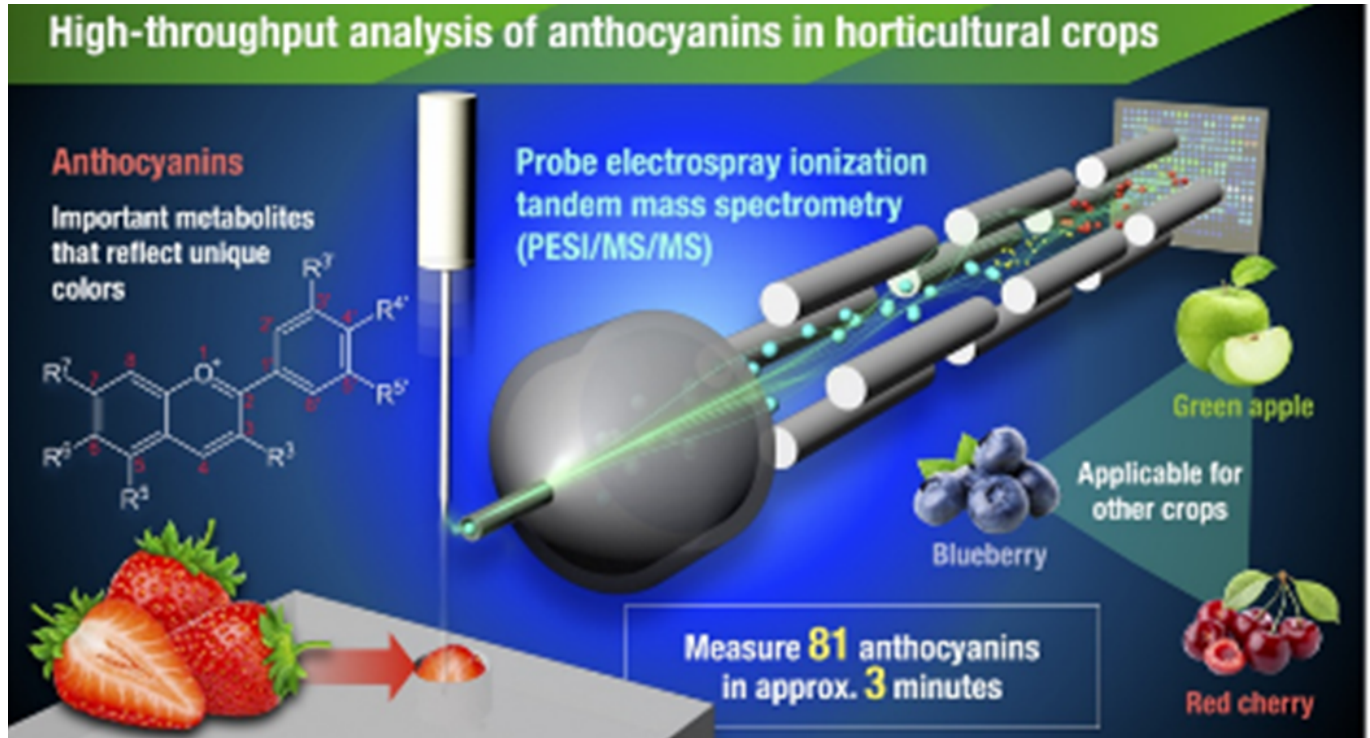


TECH OFFER

Fast and Comprehensive Analyzing Technique of Anthocyanins in Crops using PESI/MS/MS



KEY INFORMATION

TECHNOLOGY CATEGORY:

Chemicals - Analysis

Foods - Processes

TECHNOLOGY READINESS LEVEL (TRL): **TRL4**

COUNTRY: **JAPAN**

ID NUMBER: **TO175201**

OVERVIEW

The quality evaluation of crops like strawberries is currently conducted with simple methods such as the use of a saccharometer or colorimeter, or a laborious and time-consuming instrumental analysis. This technology is a simple and rapid method to analysis quantifiably various quality and functional components of agricultural crops including sugars, organic acids, amino acids, glucosinolates. One example is anthocyanin. Anthocyanins are compounds related to the color of plants. They also have beneficial effects on human health and are used as a supplement. Conventionally, the combination of liquid chromatography and mass spectrometry is used to analyze anthocyanins. This method is not applicable in situ in the agricultural industry because of considerable time and work in the pretreatment of samples. Therefore, this technology can offer the agricultural industry a more convenient yet accurate way to perform quality evaluations of their crops on site.

TECHNOLOGY FEATURES & SPECIFICATIONS

Researchers have used a technique called probe electrospray ionization tandem mass spectrometry (PESI/MS/MS) to analyze anthocyanins in crops. PESI/MS/MS, which requires no pretreatment or separation and enables rapid analysis, has been adapted to plant metabolite analysis and succeeded in specifically detecting 81 anthocyanins from 16 types of vegetables and fruits in about 3 minutes each. Furthermore, by using the probe sampling method, in which a probe is inserted directly into the sample, specific anthocyanin molecular species can be detected in the local tissues of the achene and receptacle of mature strawberry fruit.

POTENTIAL APPLICATIONS

This technology is expected to develop a simple and rapid analysis for components contained in a wide variety of plants, crops, and foods, and is expected to be applied in the fields of plant science, agriculture, and food science. Furthermore, this technology is expected to have a wide range of applications, including real-time analysis of metabolites in living plants.

Since there are numerous molecular species of anthocyanins in plants, they can be applied to simple and rapid analytical techniques to distinguish molecular species in terms of crop breeding and consumption demand.

UNIQUE VALUE PROPOSITION

By using PESI/MS/MS, the comprehensive analysis of not only anthocyanins but also various plant metabolites of crops (sugars, organic acids, amino acids, glucosinolates, etc.) and foods can be dramatically simplified and accelerated. There are no complicated extraction or separation procedures required, and 81 anthocyanins can be analyzed in only 3 minutes.