# Identification of Bioactive Compounds in Ginger Based on Molecularly Imprinted Polymer Quartz Crystal Microbalance Gas Sensor

| | |
|---|---|
| **Publons ID** | 40799068 |
| **Wos ID** | WOS:000495439000049 |
| **Doi** | 10.1088/1757-899X/546/3/032012 |
| **Title** | Identification of Bioactive Compounds in Ginger Based on Molecularly Imprinted Polymer Quartz Crystal Microbalance Gas Sensor |
| **First Author** | |
| **Last Author** | |
| **Authors** | Hardoyono, F; Windhani, K; Sambodo, H; Pudjianto, H; |
| **Publish Date** | 2019 |
| **Journal Name** | 9TH ANNUAL BASIC SCIENCE INTERNATIONAL CONFERENCE 2019 (BASIC 2019) |
| **Citation** | 8 |
| **Abstract** | Borneol, citral, and geraniol have been investigated as the major bioactive compound commonly found in ginger. In this work, a molecularly imprinted polymer (MIP) coated quartz crystal microbalance (QCM) sensor array has been employed for selective recognition of bioactive compounds in the ginger essential oil. In the experiment, the concentration of these bioactive compounds previously was measured using solid phase micro extraction gas chromatography-mass spectroscopy (SPME-GC/MS). Design of MIPs as the template of target molecules was created using polyacrylic acid (PAA) polymer matrix and three molecular targets (borneol, citral, and geraniol). An array of QCM sensor was prepared using four 9-Mhz AT-cut quartz crystal embedded between vacuum-deposited Au electrodes. For data recording, the headspace system flew the odorant of three varieties of ginger essential oil as positive control odorant and wild ginger essential oil as negative control odorant into the QCM sensor chamber. Then, mass loading in the MIP films caused frequency change of QCM sensor array due to odorant adsorption in a thin layer of MIP. Principal component analysis (PCA) and linear discriminant analysis (LDA) were applied to analyse the QCM response sensor. PCA score plot showed segregation of feature response of ginger essential oil with and without the molecular target in the coordinate of principal components. Meanwhile, LDA was able to discriminate training datasets of 80 ginger samples containing borneol, citral, and borneol with accuracy more than 92.50%. |
| **Publish Type** | Book in series |
| **Publish Year** | 2019 |
| **Page Begin** | (not set) |
| **Page End** | (not set) |
| **Issn** | 1757-8981 |
| **Eissn** | |
| **Url** | https://www.webofscience.com/wos/woscc/full-record/WOS:000495439000049 |
| **Author** | Dr KIKIN WINDHANI, S.E., M.Ec.Dev |