Simultaneous quantification of multiple bacterial metabolites using surface-enhanced Raman scattering

Simultaneous quantification of multiple bacterial metabolites using surface-enhanced Raman scattering

Given the commercial importance of the compounds produced by genetically modified organisms, there is a need for screening methods which facilitate the evaluation of newly developed strains, especially during the phase of proof-of-concept development. We report a time-efficient analysis method for the screening of bacterial strains, which enables the detection of two structurally similar secondary bacterial metabolites. By combining liquid-liquid extraction and surface-enhanced Raman scattering we were able to quantify p-coumaric acid and cinnamic acid, produced by genetically modified E. coli from tyrosine and phenylalanine, respectively. With the simple sample pre-treatment method, and by applying a partial least squares data analysis method, we simultaneously detected the analytes from four E. coli strains cultured in the presence or absence of tyrosine and phenylalanine.

General information
State: Accepted/In press
Organisations: Nanoprobes, Department of Micro- and Nanotechnology, Department of Health Technology, Bacterial Cell Factory Optimization, Novo Nordisk Foundation Center for Biosustainability, Research Groups, Polytechnic University of Turin
Number of pages: 12
Publication date: 2019
Peer-reviewed: Yes

Publication information
Journal: Analyst
ISSN (Print): 0003-2654
Ratings:
BFI (2019): BFI-level 1
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.8
Web of Science (2017): Impact factor 3.864
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.92
Web of Science (2016): Impact factor 3.885
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 4.07
Web of Science (2015): Impact factor 4.033
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 4.1
Web of Science (2014): Impact factor 4.107
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 4.11
Web of Science (2013): Impact factor 3.906
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1
Scopus rating (2012): CiteScore 3.88
Web of Science (2012): Impact factor 3.969
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 1