Explorative Solid-Phase Extraction (E-SPE) for Accelerated Microbial Natural Product Discovery, Dereplication, and Purification

Microbial natural products (NP) cover a high chemical diversity, and in consequence extracts from microorganisms are often complex to analyze and purify. A distribution analysis of calculated pK(a) values from the 34390 records in Antibase2008 revealed that within pH 2-11, 44% of all included compounds had an acidic functionality, 17% a basic functionality, and 9% both. This showed a great potential for using ion-exchange chromatography as an integral part of the separation procedure, orthogonal to the classic reversed-phase strategy. Thus, we investigated the use of an "explorative solid-phase extraction" (E-SPE) protocol using SAX, Oasis MAX, SCX, and LH-20 columns for targeted exploitation of chemical functionalities. E-SPE provides a minimum of fractions (15) for chemical and biological analyses and implicates development into a preparative scale methodology. Overall, this allows fast extract prioritization, easier dereplication, mapping of biological activities, and formulation of a purification strategy.

General information
State: Published
Organisations: Center for Microbial Biotechnology, Department of Systems Biology, Division of Seafood Research, National Food Institute
Contributors: Månsson, M., Phipps, R. K., Gram, L., Munro, M., Larsen, T. O., Nielsen, K. F.
Pages: 1126-1132
Publication date: 2010
Peer-reviewed: Yes

Publication information
Journal: Journal of Natural Products
Volume: 73
Issue number: 6
ISSN (Print): 0163-3864
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 3.81 SJR 1.368 SNIP 1.487
Web of Science (2017): Impact factor 3.885
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 3.41 SJR 1.202 SNIP 1.438
Web of Science (2016): Impact factor 3.281
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 4.14 SJR 1.382 SNIP 1.748
Web of Science (2015): Impact factor 3.662
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.68 SJR 1.326 SNIP 1.821
Web of Science (2014): Impact factor 3.798
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.75 SJR 1.512 SNIP 1.696
Web of Science (2013): Impact factor 3.947
ISI indexed (2013): ISI indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.23 SJR 1.428 SNIP 1.531
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 3.11 SJR 1.384 SNIP 1.491
Web of Science (2011): Impact factor 3.128
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.37 SNIP 1.596
Web of Science (2010): Impact factor 2.872
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.466 SNIP 1.492
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.343 SNIP 1.419
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.255 SNIP 1.487
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.162 SNIP 1.481
Scopus rating (2005): SJR 1.272 SNIP 1.385
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.015 SNIP 1.279
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.123 SNIP 1.362
Scopus rating (2002): SJR 1.237 SNIP 1.328
Scopus rating (2001): SJR 1.175 SNIP 1.315
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 1.081 SNIP 1.318
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 1.207 SNIP 1.49
Original language: English
DOI:s:
10.1021/np100151y
Source: orbit
Source-ID: 269556
Research output: Research - peer-review ; Journal article – Annual report year: 2010