Estimation of caffeine intake from analysis of caffeine metabolites in wastewater - DTU Orbit (13/12/2018)

Estimation of caffeine intake from analysis of caffeine metabolites in wastewater

Caffeine metabolites in wastewater were investigated as potential biomarkers for assessing caffeine intake in a population. The main human urinary metabolites of caffeine were measured in the urban wastewater of ten European cities and the metabolic profiles in wastewater were compared with the human urinary excretion profile. A good match was found for 1,7-dimethyluric acid, an exclusive caffeine metabolite, suggesting that might be a suitable biomarker in wastewater for assessing population-level caffeine consumption. A correction factor was developed considering the percentage of excretion of this metabolite in humans, according to published pharmacokinetic studies. Daily caffeine intake estimated from wastewater analysis was compared with the average daily intake calculated from the average amount of coffee consumed by country per capita. Good agreement was found in some cities but further information is needed to standardize this approach. Wastewater analysis proved useful to providing additional local information on caffeine use.

General information
State: Published
Organisations: Department of Environmental Engineering, Water Technologies, Department of Chemical and Biochemical Engineering, CAPEC-PROCESS, University of South Australia, University of Oslo, University of Antwerp, Swiss Federal Institute of Aquatic Science and Technology, University of Porto, University of Queensland, University of Amsterdam, Jaume I University, IRCCS Istituto di ricerche farmacologiche Mario Negri - Milano, Bergamo, Ranica, University of Bath, Chemical Water Quality and Health, Norwegian Institute for Water Research
Number of pages: 7
Pages: 1582-1588
Publication date: 31 Dec 2017
Peer-reviewed: Yes

Publication information
Journal: Science of the Total Environment
Volume: 609
ISSN (Print): 0048-9697
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 4.98 SJR 1.546 SNIP 1.65
Web of Science (2017): Impact factor 4.61
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 5.09 SJR 1.652 SNIP 1.856
Web of Science (2016): Impact factor 4.9
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 4.33 SJR 1.653 SNIP 1.648
Web of Science (2015): Impact factor 3.976
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 4.2 SJR 1.635 SNIP 1.843
Web of Science (2014): Impact factor 4.099
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.73 SJR 1.527 SNIP 1.745
Web of Science (2013): Impact factor 3.163
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 3.7 SJR 1.749 SNIP 1.82
Web of Science (2012): Impact factor 3.258
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 3.61 SJR 1.802 SNIP 1.676
Web of Science (2011): Impact factor 3.286
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.651 SNIP 1.506
Web of Science (2010): Impact factor 3.19
Web of Science (2010): Indexed yes
BFI (2009): BFI-level 1
Scopus rating (2009): SJR 1.576 SNIP 1.6
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.461 SNIP 1.489
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.393 SNIP 1.473
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.512 SNIP 1.586
Web of Science (2006): Indexed yes
Scopus rating (2005): SJR 1.439 SNIP 1.509
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 1.126 SNIP 1.299
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 1.156 SNIP 1.35
Web of Science (2003): Indexed yes
Scopus rating (2002): SJR 1.175 SNIP 1.359
Web of Science (2002): Indexed yes
Scopus rating (2001): SJR 1.054 SNIP 1.076
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.916 SNIP 1.051
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.897 SNIP 0.934
Original language: English
Keywords: 1,7-dimethyluric acid, Back-calculation, Caffeine, Correction factor, Urinary biomarkers, Wastewater-based epidemiology
DOIs: 10.1016/j.scitotenv.2017.07.258
Source: Scopus
Source-ID: 85026854293
Research output: Research - peer-review ; Journal article – Annual report year: 2017