Air pollution, metabolites and respiratory health across the life-course

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 4651600
Author(s) Gruzieva, O.; Jeong, A.; He, S.; Yu, Z.; de Bont, J.; Pinho, M. G. M.; Eze, I. C.; Kress, S.; Wheelock, C. E.; Peters, A.; Vlaanderen, J.; de Hoogh, K.; Scalbert, A.; Chadeau-Hyam, M.; Vermeulen, R. C. H.; Gehring, U.; Probst-Hensch, N.; Melén, E.
Author(s) at UniBasel Jeong, Ayoung ; Eze, Ikenna ; de Hoogh, Kees ; Probst-Hensch, Nicole ;
Year 2022
Title Air pollution, metabolites and respiratory health across the life-course
Journal European respiratory review
Volume 31
Number 165
Pages / **Article-Number** 220038
Mesh terms Adult; Air Pollutants, adverse effects; Air Pollution, adverse effects; Child; Cross-Sectional Studies; Environmental Exposure, adverse effects; Humans; Particulate Matter
Previous studies have explored the relationships of air pollution and metabolic profiles with lung function. However, the metabolites linking air pollution and lung function and the associated mechanisms have not been reviewed from a life-course perspective. Here, we provide a narrative review summarising recent evidence on the associations of metabolic profiles with air pollution exposure and lung function in children and adults. Twenty-six studies identified through a systematic PubMed search were included with 10 studies analysing air pollution-related metabolic profiles and 16 studies analysing lung function-related metabolic profiles. A wide range of metabolites were associated with short- and long-term exposure, partly overlapping with those linked to lung function in the general population and with respiratory diseases such as asthma and COPD. The existing studies show that metabolomics offers the potential to identify biomarkers linked to both environmental exposures and respiratory outcomes, but many studies suffer from small sample sizes, cross-sectional designs, a preponderance on adult lung function, heterogeneity in exposure assessment, lack of confounding control and omics integration. The ongoing EXposome Powered tools for healthy living in urbAN Settings (EXPANSE) project aims to address some of these shortcomings by combining biospecimens from large European cohorts and harmonised air pollution exposure and exposome data.
ISSN/ISBN 0905-9180
URL https://doi.org/10.1183/16000617.0038-2022
edoc-URL https://edoc.unibas.ch/90520/
Full Text on edoc Available;
Digital Object Identifier DOI 10.1183/16000617.0038-2022
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/35948392
ISI-Number WOS:000839376600002
Document type (ISI) Journal Article, Review