

Call for posters - "International conference on the E-Cigarette: patterns of use and health impacts"



Call for posters

"International conference on the E-Cigarette: patterns of use and health impacts" - Paris, on 5-6th December 2022

Submission form

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NB: Please fill out one form for each abstract

Contact details of the corresponding author or organiser

Title

Ms

First name

Marie

Last name

Lenski

E-mail

marie.lenski@univ-lille.fr

Institution / company

University of Lille

Unit / department

ULR4483, IMPECS

Address

1 Place de Verdun, Faculté de Médecine - Pôle Recherche, 3ème étage EST
LILLE CEDEX, 59045
France

Background information

Theme of conference

Health impact

Keywords (please select 3 keywords to confirm your choice)

Fundamental sciences

Health impact

Toxicants

Abstract title

Metabolomic strategy to identify markers of exposure and toxicity of electronic cigarettes, heated tobacco products and tobacco cigarettes

Author's contact details :

Title

Ms

First name

Marie

Last name

Lenski

E-mail

marie.lenski@univ-lille.fr

Institution / company

University of Lille

Co-author's contact details :

Number of co-authors

6

Co-author 1

Gianni Zarcone Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Co-author 2

Saïd Maallem Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Co-author 3

Guillaume Garçon Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Co-author 4

Jean-Marc Lo Guidice Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Co-author 5

Delphine Allorge Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Co-author 6

Sébastien Anthérieu Univ. Lille, CHU Lille, Institut Pasteur de Lille, ULR 4483, IMPECS - IMPact de l'Environnement Chimique sur la Santé humaine, F-59000, Lille, France

Abstract details

Background, method, results and conclusions

BACKGROUND: Combustible cigarette smoking is an established risk factor for various pathologies including lung cancer. By contrast, harmlessness or toxicity electronic cigarettes (e-cig) and of heated tobacco products (HTP) used as smoking substitutes has not yet been proved. This study aims to explore and compare the metabolome of immortalized human lung epithelial cells exposed to emissions of e-cig, HTP, or tobacco cigarette, in order to highlight their specific metabolic fingerprints. **METHOD:** BEAS-2B cells were cultured at air-liquid interface and exposed to air (control) or emissions from reference 3R4F cigarette (1 min or 2 min), e-cig 18W or 30W (30 min or 60 min), or HTP (30 min or 60 min) using the Vitrocell smoking machine. Duration of exposures were chosen based on comparable sub-toxic doses (> 80% cell viability) previously reported, to evaluate a potential time-dependant effect. An untargeted metabolomic strategy was performed by UHPLC-IMS-QToF mass spectrometry. Statistical analysis performed by PLS-DA, ANOVA and t-test permitted to highlight significant metabolites. **RESULTS:** Both 3R4F and HTP emissions significantly affected metabolome, whereas no difference was observed after e-cig exposures, compared to controls. A total of 198 and 204 metabolites was deregulated after 30 min and 60 min of HTP exposure respectively, out of which (197 in common metabolite). 54% of deregulated metabolites presented an up-regulation. Exposures to 1 and 2 min of 3R4F emissions induced fluctuation of 46 and 51 compounds respectively (46 in common). 51% of deregulated metabolites presented an up-regulation. **CONCLUSIONS:** This metabolomic strategy gives new insights to discover potential markers of disrupted metabolic pathways after cigarette or HTP exposure, both tobacco products. The present data agree with transcriptomic results obtained on the same model and constitute a baseline for further cross-disciplinary research by integrative biology.

Main messages

Metabolomics strongly suggest a lower toxicity of e-cig compared to those of 3R4F cigarette and HTP emissions in the BEAS-2B cell line. Increasing the duration of exposure sparsely impacts the metabolite profile.

Type of study / research

Original study

Geography of the study

Europe

Funding of study

Federal source

No

State source

No

Nonprofit Grant Funding Entity Source

No

Nonprofit Grant Funding Entity Source

No

Academic Institution Source

No

Pharmaceutical Industry Source

No

Tobacco/E-Cigarette Industry Source

No

Declaration of interest

The submitter declares that during the past 5 years have a direct nor indirect link (professional*, personal or financial) with the tobacco and e-cigarette companies**

No