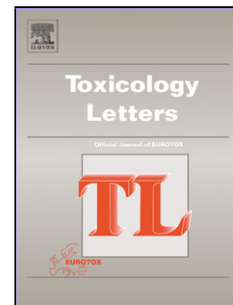


Accepted Manuscript

Title: Impact of zinc oxide nanoparticles on an *in vitro* model of the human air-blood barrier

Authors: Rossella Bengalli, Maurizio Gualtieri, Laura Capasso, Chiara Urani, Marina Camatini



PII: S0378-4274(17)31114-1
DOI: <http://dx.doi.org/doi:10.1016/j.toxlet.2017.07.877>
Reference: TOXLET 9898

To appear in: *Toxicology Letters*

Received date: 28-3-2017
Revised date: 4-7-2017
Accepted date: 9-7-2017

Please cite this article as: Bengalli, Rossella, Gualtieri, Maurizio, Capasso, Laura, Urani, Chiara, Camatini, Marina, Impact of zinc oxide nanoparticles on an *in vitro* model of the human air-blood barrier. *Toxicology Letters* <http://dx.doi.org/10.1016/j.toxlet.2017.07.877>

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1 **Impact of zinc oxide nanoparticles on an *in vitro* model of the human air-blood barrier**

2 Rossella Bengalli^{1,3,#,*}, Maurizio Gualtieri^{2,#}, Laura Capasso^{1,3}, Chiara Urani^{1,3}, Marina Camatini³.

3 ¹Department of Earth and Environmental Sciences, University of Milan Bicocca, Piazza della Scienza 1, 20126,

4 Milan, Italy

5 ²Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) SSPT

6 - MET - INAT, Via Martiri di Monte Sole , 4 40129 Bologna, Italy.

7 ³POLARIS Research Centre, University of Milan Bicocca, Piazza della Scienza 1, 20126, Milan, Italy

8 *Corresponding author: Rossella Bengalli, rossella.bengalli@unimib.it

9 #Equal contributors: Rossella Bengalli, Maurizio Gualtieri

10 HIGHLIGHTS

- 11 ➤ *In vitro* co-culture and tri-culture models of the air-blood barrier (ABB) were used to assess zinc oxide
12 nanoparticles (nZnO) toxicity.
13 ➤ No-cytotoxic nZnO doses do not reduce barrier integrity, but induces inflammatory responses.
14 ➤ Endothelial release of IL-6 and sVCAM-1 suggests a vascular damage related to cytokines production.
15 ➤ Monocytes modulate the release of cytokines and the endothelial activation molecules, suggesting
16 their possible role in NPs-associated vascular diseases.

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19 **Authors Informations:**

20 Rossella Bengalli: rossella.bengalli@unimib.it

21 Maurizio Gualtieri: maurizio.gualtieri@enea.it

22 Laura Capasso: laura.capasso@unimib.it

23 Chiara Urani: chiara.urani@unimib.it

24 Marina Camatini: marina.camatini@unimib.it

25

26 **Abstract**

27 The inhalation of zinc oxide nanoparticles (nZnO) may induce systemic diseases, damages to the alveolar
28 epithelium and inflammatory response to endothelial cells. In this work the use of an *in vitro* air-blood barrier
29 (ABB) model provided a tool to elucidate the biological mechanisms underlying the potential effects of

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