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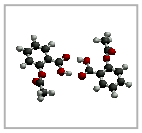
http://www.vigicell.fr

In vitro evaluation of exposure to an inhaled chemical agent

Direct, controlled contact between cell models and a real, complete atmosphere

24/10/2007



Substances inhaled

:drugs, nanoparticles, masking agents, solvents, medical gases, etcc

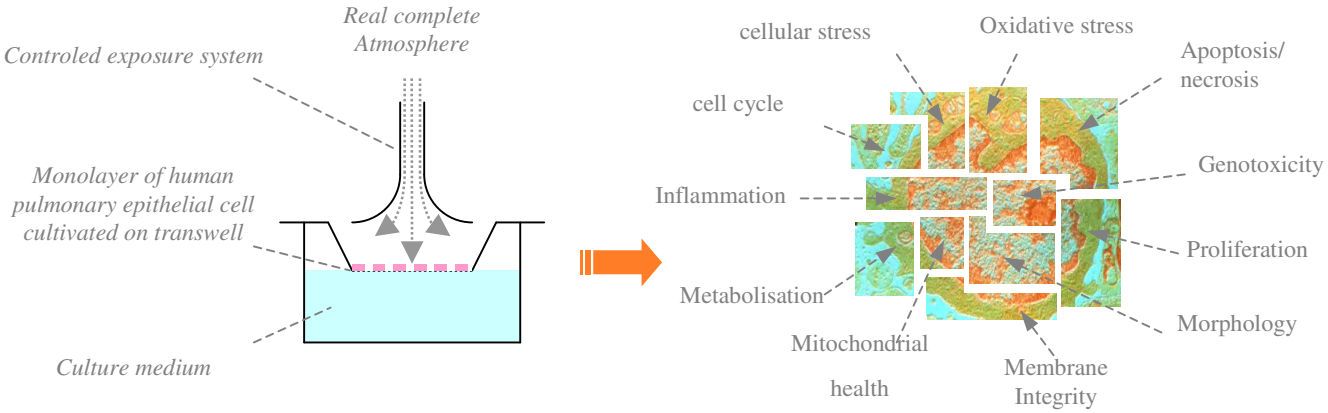
Atmosphere

health & safety at work, indoor air, gaseous effluents, etcc

From exposure to analysis: a full and unique range of technical resources and skills

The quality of an atmosphere is difficult to study because it generally involves very low concentrations of chemical agents in a variety of complex forms (gases, aerosols, particles, nanoparticles, etc.). Given this complexity, a comprehensive biological evaluation is a highly relevant complement to physicochemical analyses which can detect the presence of known substances but do not provide information on the noxiousness of the overall mixture.

VigiCell uses a new system which puts human cell-based models in direct contact with the air – this enables us to study real, complete atmospheres and thus increases the relevance of our experimental results.



1/ exposure
(choice of exposure time, atmosphere composition, etc.)

2/ multiparameter analysis of cellular effects
(a global vision of the status of the main cellular effects: see the sheet on cellular wellbeing)

- Controlled, standardized exposure
- Exposure to a real atmosphere: *gases, aerosols, particles, nanoparticles*
- Exposure to a complete atmosphere: *observation of potential interactions between the various components*
- The possibility of on-site intervention, with direct exposure to the test atmosphere
- Multiparameter analysis of cellular effects

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1 Choice of test conditions

Depending on the context, the test atmospheres can be as follows:

- Model or reconstituted atmospheres
- Real atmospheres

Depending on the objectives and practical constraints, each atmosphere can be studied:

- at different concentrations (by dilution with clean air)
- with different exposure times
- with or without pre-processing (e.g. filtration), if one wishes to fractionate the test atmosphere in order to identify the most troublesome components or the interactions between components. .

2 The possibility of on-site intervention

3 Coupling with in vivo observations in humans

When people have already been exposed to the test conditions (e.g. health & safety at work, commercialized products, clinical trials), in vitro experiments can be coupled to the monitoring of complementary biomarkers or similar in vivo measurements based on biological samples: blood, expired air, urine, etc. (see the "in vivo" sheet).

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As well as designing and performing toxicology studies, VigiCell also...

- ***in vitro* cellular type :** *ref. « model » sheet*
- ***in vivo* expériments** *(in Human) : ref. « in vivo » sheet*
- **Cellular health :** *apoptosis/necrosis , mitochondrial activity , morphology , proliferation and cell cycle , oxidative stress , cellular stress , membrane integrity … (ref. « screening », « biomonitoring » sheet, « REACH »)*
- **Genotoxicity :** *micronucleus assay , Comet assay , (ref. f « comet » and « micronucleus »), p21, p53, mdm2, gadd45*
- **Blood-Brain-Barrier :** *kinetic and toxicity (ref. « BBB » sheet)*
- **Inflammation :** *transendothelial lymphocyte passage ; adhesion molecules expression ; … (ref. « inflammation » sheet)*
- **Angiogenesis :** *« Wound repair » on cellular monolayers, invasion and/or migration through boyden chambers, endothelial tubes formation*

And PARTNERSHIP :

- **Transmembrane/organ passage** *Skin, Intestine, Cornea, mucosa*
- **Endocrine disruptors** *(interactions with enzyme receptors)* **and Thyroïdian disruptors** *(activity modulation of D2 and D3 enzymes)*
- **Metabolisation :** *expression (inhibition/induction) of cytochromes , metabolic stability , Characterisation of metabolites*
- **Reprotoxicity :** *follicle biossay, in vitro maturation assay, In vitro fertilization assay, mouse embryo assay, embryonic stem cell test, uterine contractivity, sperm analysis*

Screening – biomonitoring – REACH – Case studies – Contract R&D

Contact us to learn about the full range of our activities and services

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