In vitro mammalian cell micronucleus test

Commonly used acronym: micronucleus, MN,MNT
Created on: 22-02-2019 - Last modified on: 20-03-2019

SCOPE OF THE METHOD

<table>
<thead>
<tr>
<th>Alternative method relates to</th>
<th>Human health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative method is situated in</td>
<td>Basic Research</td>
</tr>
<tr>
<td>Type of alternative method</td>
<td>In vitro - Ex vivo</td>
</tr>
<tr>
<td>This method makes use of</td>
<td>Animal derived cells / tissues / organs</td>
</tr>
<tr>
<td>Species from which cells/tissues/organisms are derived</td>
<td>Hamster</td>
</tr>
<tr>
<td>Type of cells/tissues/organisms</td>
<td>CHO-K1 cells</td>
</tr>
</tbody>
</table>

DESCRIPTION

Method keywords
DNA damage
micronuclei
in-vitro
CHO-K1
cells
OECD
carcinogenic
chromosomal aberration
Scientific area keywords

- toxicological
- genotoxic

Method description

The in vitro micronucleus test is a genotoxicity test for the detection of micronuclei in the cytoplasm of interphase cells. Micronuclei may originate from acentric chromosome fragments (i.e. lacking a centromere), or whole chromosomes that are unable to migrate to the poles during the anaphase stage of cell division. Therefore the micronucleus test is an in vitro method that provides a comprehensive basis for investigating chromosome damaging potential in vitro because both aneugens and clastogens can be detected in cells that have undergone cell division during or after exposure to the test chemical. The test is therefore used to quantify the DNA damaging capability of an agent.

Lab equipment

- Fluorescence microscope
- Analysis software (e.g. metafer4)

Method status

- Published in peer reviewed journal
- Validated by an external party (e.g. OECD, EURL ECVAM,...)

PROS, CONS & FUTURE POTENTIAL

Advantages

- Simple and easy to identify endpoint

Challenges

- Types of chromosomal aberration cannot be classified
- Possible pseudo-micronuclei Interpretation while analyzing the results (scoring of micronuclei)

Modifications
Use of other cell types

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References


Associated documents

OECD in vitro mammalian cell micronucleus test.pdf

Links

OECD Test guideline

PARTNERS AND COLLABORATIONS

Organisation
Name of the organisation  Sciensano
Department  Chemical and physical health risks
Specific Research Group or Service  Risk and health impact assessment
Country  Belgium