

In vitro mammalian cell micronucleus test

Commonly used acronym: micronucleus, MN, MNT

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SCOPE OF THE METHOD

Alternative method relates to	Human health
Alternative method is situated in	Basic Research
Type of alternative method	In vitro - Ex vivo
This method makes use of	Animal derived cells / tissues / organs
Species from which cells/tissues/organs are derived	Hamster
Type of cells/tissues/organs	CHO-K1 cells

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

Identification and risk assessment of human and veterinary antibiotics in the wastewater treatment plants and the adjacent sea in Tunisia Leyla Tahrani Joris Van Loco Roel Anthonissen Luc Verschaeve Hedi Ben Mansour Tim Reyns Water Sci Technol (2017) 76 (11): 3000-3021

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

Coordinated by



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