

# In vitro mammalian cell micronucleus test

*Commonly used acronym: micronucleus, MN, MNT*

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## SCOPE OF THE METHOD

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