

Fish acute embryo test for evaluation of thyroid hormone system disruption

Commonly used acronym: FET for THSD

Created on: 01-07-2022 - Last modified on: 27-04-2023

Organisation

Name of the organisation University of Antwerp (UAntwerpen)

Department Veterinary Sciences

Country Belgium

SCOPE OF THE METHOD

The Method relates to	Animal health, Environment, Human health
The Method is situated in	Basic Research, Translational - Applied Research
Type of method	In vivo
Used species	Currently mainly zebrafish (Danio rerio) but other species are possible such as fathead minnow
Targeted organ system or type of research	thyroid hormone system

DESCRIPTION

Method keywords

Endocrine disrupting chemicals

Fish embryo

zebrafish

Hormone responsiveness

Scientific area keywords

regulatory toxicology

aquatic toxicity

human health

Environmental health

Method description

Thyroid hormone system disruption (THSD) has detrimental effects on both human and environmental health. As a rising number of chemicals are reported to interfere with the thyroid hormone system, there is an increasing need for fast and reliable evaluation methods to test for THSD. Currently, established *in vivo* endocrine disruptor tests are labour and time intensive and require the use of mostly mammalian laboratory animals. In the current method the fish embryo acute toxicity test (OECD test guideline 236), which determines lethality, is being adapted to include THSD-responsive endpoints (thyroid hormone levels, swim bladder inflation and eye development). In this test, the fish embryos are continuously exposed to a test chemical and development is monitored daily. At the end of the exposure, lethal and sublethal effects as well as effects on swim bladder inflation and eye development are assessed and samples are collected for thyroid hormone measurements. The test duration is limited to the non-protected life stages of fish and thus supports reducing the number of laboratory animals.

Lab equipment

- Fish breeding setup,
- incubator with light/dark cycle for embryo exposure,
- stereomicroscope for observation of embryos.

Method status

Currently submitted for further validation by an external party (e.g. OECD, EURL ECVAM,...)

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

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