Chemical Activated LUciferase gene eXpression

Commonly used acronym: *CALUX*

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Organisation

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SCOPE OF THE METHOD

The Method relates to	Environment, Human health
The Method is situated in	Basic Research, Education and training, Regulatory use - Routine production, Translational - Applied Research
Type of method	In vitro - Ex vivo
Specify the type of cells/tissues/organs	Both human (breast cancer) and animal (mouse hepatoma)

DESCRIPTION

Method keywords

in vitro bioassay
endocrine activity
bio-equivalent concentration
estrogen receptor
androgen receptor
aryl hydrocarbon receptor
mixture effects
Endocrine disrupting chemicals

Scientific area keywords

Toxicology
Environmental health
human health
Endocrine disrupting chemicals

Method description

The CALUX method is an *in vitro* bioassay that uses reporter gene cell lines that have been stably transfected with a luciferase reporter gene under the control of relevant receptor specific DNA response element. This enables the screening for chemicals that can bind to specific receptors and activate transcription. This activation will lead to the production of luciferase, and the amount of induced luciferase is directly proportional to the concentration and potency of the inducing chemical(s)/samples to which the cells have been exposed. CALUX is a semi-quantitative method, where a BEQ (bio-equivalent concentration) can be determined relative to a standard.

Lab equipment

- Class II microbiological Safety cabinet,
- Incubator (humidity 80%, 5%CO2),
- Luminometer to measure luciferase activity.

PROS, CONS & FUTURE POTENTIAL

Advantages

- You measure the overall activity, so you take mixture effects into account ;
- Relatively cheap ;
- Can be used as a quick screening method for endocrine activity.

Challenges

- No identification, you measure the overall activity of a sample ;
- You measure the activity on a receptor, you don't know anything about endocrine disruption *in vivo*.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

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