

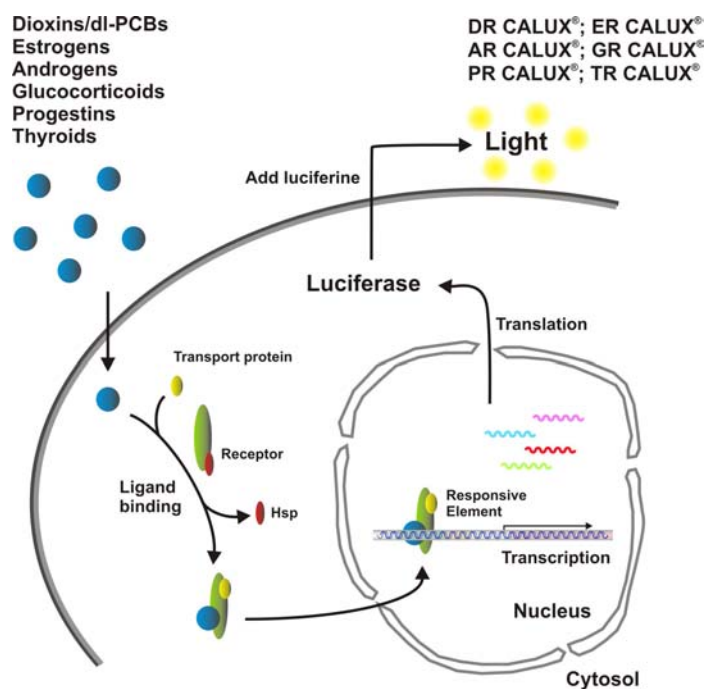
CALUX® Assays

The CALUX® (**C**hemical **A**ctivated **L**uciferase gene **eX**pression) Assays from BioDetection Systems can be used to detect certain chemicals like dioxins, dioxin-like PCB's or (anti)estrogens and (anti)androgen compounds.

The innovative CALUX® cells have been tailored so that they produce light in a dose responsive way when exposed to the chemicals.

The switch that turns the light on is specific to compounds or groups of compounds that have the same mode of action giving the specific CALUX® assay a selectivity and biological relevance that cannot be matched by instrumental techniques.

The compounds binding to the so called Ah-receptor is followed by transportation of the PHAH-Ah receptor complex into the nucleus of the cell and subsequent binding to specific sequences in the DNA. These specific DNA sequences are called responsive elements (REs). Binding of the chemical-receptor complex to the RE triggers the expression of RE associated genes. The toxicological impact of the chemicals starts with the observed change in gene expression.



Dioxins

From 1 July 2002, the European Union set maximum limit values for dioxins in food and feed. Dioxins are one of the most toxic man-made compounds known and can be measured with the DR CALUX®. The DR CALUX® technology is being used as a rapid, sensitive and cost effective tool for screening food and feed ingredients for dioxin and dioxin-like compounds. Traditional instrumental techniques such as GCMS and HRGCMS can only analyse one sample at a time, making them comparably slow and expensive and not suitable for screening large numbers of samples rapidly.

Estrogens

Estrogens like estradiol, a female sex hormone, has a direct effect on the function of the reproductive system, the nervous system, the cardiovascular system and the skeletal system and can be measured by the ER CALUX®. Blood sugar levels, skin and other tissues and functions are also significantly influenced by estradiol. Like all steroid hormones, excessive amounts of estradiol can contribute to a number of increased health risks.

Method

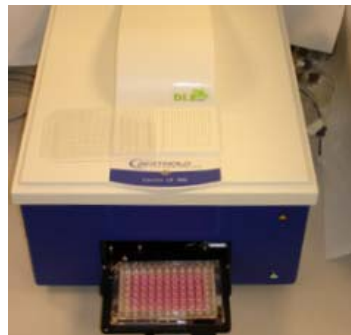
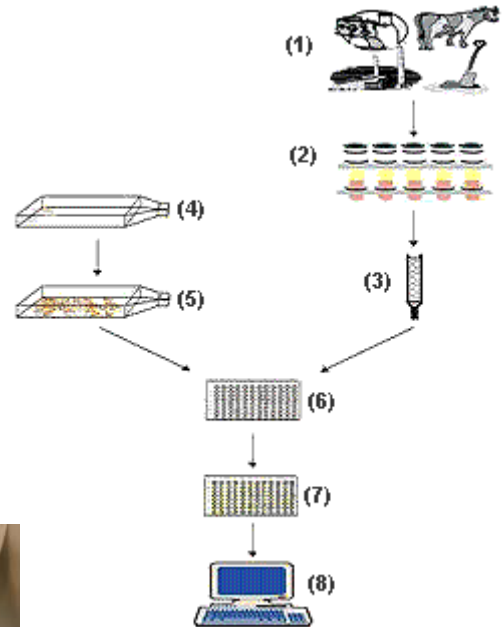
The technique is undertaken on 96-well plates, which makes it possible for large numbers of samples to be analysed simultaneously.

After sample collection (1), a simple extraction method is used to extract the chemical content (2). The extract is cleaned-up and fractionated if desired (3), after which the clean extract is dissolved in DMSO.

Meanwhile, BDS' CALUX[®] cells are cultured (4, 5) and finally grown in 96-well plates under standardized conditions.

Once a confluent monolayer is obtained, the cells are exposed to the diluted cleaned extracts (6).

After lysisation and adding luciferin, the luciferase activity is quantitated using the CentroXS3 microplate luminometer (7).



BioDetection Systems' kits:

DR CALUX[®] for dioxins and dioxin-like compounds such as PCBs

ER CALUX[®] for estrogens and pseudo estrogens

AR CALUX[®] androgen hormones

www.bds.com



BERTHOLD TECHNOLOGIES' instruments:

Centro XS3 Microplate Luminometer



With this abstract BERTHOLD TECHNOLOGIES likes to give a short introduction and some information about available kits. BERTHOLD TECHNOLOGIES will not be in no way responsible for the validity of information given on these pages.

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