Launch of three new pre-validations by Pepper

- ***In vitro* assay for hepatic triglyceride accumulation** (developed by the German Federal Institute for Risk Assessment (BfR))

Liver steatosis is an accumulation of fat in liver that may lead to non-alcoholic fatty liver disease (NAFLD), and, in most serious cases, to a fibrosis of the liver that can induce major damage to the liver. Non-alcoholic fatty liver disease (NAFLD) is considered the most common liver disorder, affecting around 25% of the population worldwide. Currently, the essential role of environmental pollutants in NAFLD development is recognized. Particularly, endocrine-disrupting chemicals (EDCs) have a notable influence on this disease (Cano and al., 2021).

The ***in vitro* assay for hepatic triglyceride accumulation** measures the accumulation of triglycerides in human liver cells. This *in vitro* test method determines quantitatively the intracellular accumulation of triglycerides in HepaRG (human hepatocarcinoma) cells. Currently, HepaRG cells are the best known model to study human hepatocytes. This accumulation is measured using a fluorescent dye.

- **Deiodinase 1 (DIO1) activity based on Sandell-Kolthoff (SK) reaction** (developed by the BASF and BfR in Germany)

Thyroid hormones (THs) are important regulators of growth, development, and homeostasis of all vertebrates. The deiodination of thyroid hormones by deiodinase (DIO1) plays a fundamental role in the regulation of thyroid hormone concentration in peripheral tissues as well as plasma concentration. There are many environmental contaminants that are known to disrupt TH action, yet their mechanisms are only partially understood that lead to a gap in existing methods to detect such chemicals. However, it has been proved that several chemicals can disrupt Deiodinase 1 activity and consequently alter the thyroid function (Schmutzler and al., 2007).

The **Deiodinase 1 (DIO1) activity based on Sandell-Kolthoff (SK)** reaction uses a colorimetric Sandell-Kolthoff (SK) reaction to quantify DIO1 activity in cell material.

- ***Mineralocorticoid Receptor Transactivation Assay (MR TA)*** *(*developed by the IRCM – INSERM U 1194)

GR and MR mediate the actions of glucocorticoids and mineralocorticoids, respectively, which are two main classes of corticosteroids involved in many physiological processes. EDCs interfere with GR/MR activity by disrupting ligand/DNA-receptor binding, GR/MR expression and translocation (Zhang and al., 2019).

The ***MR TA*** measures the activation/inhibition of the human Mineralocorticoid Receptor (MR) through a luciferase reporter gene. It is based on the human uterine adenocarcinoma cells (HeLa cells)(or U2OS human cells) stably expressing the ligand binding domain (LBD) of human MR fused to the yeast GAL4 DNA binding domain (DBD). This stable model allows specific and sensitive measurement of hMR ligand activities and is a high-throughput, cell-based screening tool for identifying and characterizing hMR ligands.

If you want to know more about Pepper: https://ed-pepper.eu/

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