

Adult skin stem cell-derived in vitro model of hepatic steatosis

Commonly used acronym: Steatosis model

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SCOPE OF THE METHOD

Alternative method relates to	Human health
Alternative method is situated in	Translational - Applied Research
Type of alternative method	In vitro - Ex vivo
This method makes use of	Human derived cells / tissues / organs
Species from which cells/tissues/organs are derived	Human
Type of cells/tissues/organs	Skin-derived adult stem cells
Specify the type of cells/tissues/organs	Human skin-derived hepatic cells

DESCRIPTION

Method keywords

Stem cells

differentiation

Gene expression

in vitro

Lipids

Scientific area keywords

Steatosis

liver

NAFLD

metabolic syndrome

lifestyle

hepatology

Method description

Human skin-derived adult stem cells differentiated towards hepatic cells (hSKP-HPC) are used in this method (R. M. Rodrigues et al., *Stem Cells Dev.* 23, 44–55 (2014)). These cells are exposed to a cocktail of insulin and glucose at certain concentrations. After 24h of exposure, these cells exhibit a strong induction of lipogenic genes and accumulate neutral lipids. Using this model, potential new anti-steatosis and anti-non-alcoholic steatohepatitis (NASH) drugs can be tested for their anti-steatotic potentials. The read-outs for this in vitro disease model are (i) gene expression analysis and (ii) neutral lipids quantification.

Lab equipment

Biosafety cabinet

Flow-cytometer

RT-qPCR

Cell culture equipment

Method status

Still in development

PROS, CONS & FUTURE POTENTIAL

Advantages

Fast (24h)

Human-relevant

Challenges

Lipid load is only +/- 1.5 -2 x fold higher in the steatosis condition vs the control condition

Modifications

Addition of other sugars

Future & Other applications

The main application is located in preclinical drug testing

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

R. M. Rodrigues et al., Stem Cells Dev. 23, 44–55 (2014). R. M. Rodrigues et al., Arch. Toxicol. 90, 677–689 (2016)

Associated documents

PARTNERS AND COLLABORATIONS

Organisation

Name of the organisation Vrije Universiteit Brussel

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Coordinated by



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