

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

*Commonly used acronym: Steatosis model*

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## Organisation

**Name of the organisation** Vrije Universiteit Brussel (VUB)

**Department** Pharmaceutical and Pharmacological Sciences

**Specific Research Group or Service** In Vitro Toxicology and Dermato-Cosmetology

**Country** Belgium

**Geographical Area** Brussels Region

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Translational - Applied Research
<b>Type of method</b>	In vitro - Ex vivo
<b>Species from which cells/tissues/organs are derived</b>	Human
<b>Type of cells/tissues/organs</b>	Skin-derived adult stem cells
<b>Specify the type of cells/tissues/organs</b>	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)

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