

# Hepatic differentiation of human skin-derived precursor cells

*Commonly used acronym: SKP-HPC*

*Created on: 20-03-2019 - Last modified on: 28-02-2022*

## SCOPE OF THE METHOD

<b>The Method relates to</b>	Human health
<b>The Method is situated in</b>	Basic Research
<b>Type of method</b>	In vitro - Ex vivo
<b>This method makes use of</b>	Human derived cells / tissues / organs
<b>Specify the type of cells/tissues/organs</b>	skin-derived precursor cells

## DESCRIPTION

### Method keywords

skin

Stem cells

hepatocyte

differentiation

## **Scientific area keywords**

stem cells

cellular differentiation

hepatic differentiation

## **Method description**

Human skin-derived precursor cells (hSKP) are cultivated at 90% confluency on 100 µg/mL collagen type I in base medium and sequentially exposed to hepatogenic factors. Base medium consists of Dulbecco's Modified Eagle Medium + GLUTAMAX / F12 Nutrient supplement (3:1), supplemented with 7.33 IE/ml benzyl penicillin, 50 µg/mL streptomycin sulfate, 0.1 mM L-ascorbic acid, 0.03 mM nicotinamide, 0.25 mM sodium pyruvate and 2.5 µg/mL fungizone. The procedure is as follows: day 0: base medium + 50 ng/mL activin A; days 1-2: base medium + 25 ng/mL activin A + 5 ng/ml FGF4 + 10 ng/mL BMP4; days 3-5: base medium + 10 ng/mL FGF4 + 20 ng/mL BMP4; days 6-8: base medium + 5 ng/mL FGF4 + 10 ng/mL BMP4 + 30 ng/mL HGF + 0.5 x ITS; days 9-11: base medium + 30 ng/mL HGF + 0.25 x ITS + 20 µg/L dexamethasone; days 12-14: base medium + 20 ng/mL HGF + 20 µg/L dexamethasone; and from day 15 onwards: base medium + 20 ng/mL HGF + 20 µg/L dexamethasone + 10 ng/mL OSM. Unless otherwise defined, media are changed every 3 days.

## **Lab equipment**

Biosafety cabinet level 2;

Cell incubator.

## **Method status**

History of use

Internally validated

Published in peer reviewed journal

## **PROS, CONS & FUTURE POTENTIAL**

### **Advantages**

Reproducible method to generate hepatocyte-like cells from skin-derived precursor cells.

### **Challenges**

Cell culture heterogeneity.

## **REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION**

### **References**

De Kock J, Rodrigues RM, Buyl K, Vanhaecke T, Rogiers V. (2015) Human Skin-Derived Precursor Cells: Isolation, Expansion, and Hepatic Differentiation. *Methods Mol Biol.* 1250:113-22

Rodrigues RM, De Kock J, Branson S, Vinken M, Meganathan K, Chaudhari U, Sachinidis A, Govaere O, Roskams T, De Boe V, Vanhaecke T, Rogiers V. (2014) Human skin-derived stem cells as a novel cell source for in vitro hepatotoxicity screening of pharmaceuticals. *Stem Cells Dev.* 23(1):44-55

### **Associated documents**

## **PARTNERS AND COLLABORATIONS**

## 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

*Coordinated by*



*Financed by*

