

# Hepatic differentiation of human skin-derived precursor cells

*Commonly used acronym: SKP-HPC*

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## SCOPE OF THE METHOD

<b>Alternative method relates to</b>	Human health
<b>Alternative method is situated in</b>	Basic Research
<b>Type of alternative 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

**Department** Pharmaceutical and Pharmacological Sciences (FARM)

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

**Country** Belgium

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