Hepatic differentiation of rat liver epithelial cells

Commonly used acronym: *rLEC-Hep*

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Organisation

Name of the organisation Vrije Universiteit Brussel (VUB)

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

Country Belgium

Geographical Area Brussels Region

SCOPE OF THE METHOD

The Method relates to	Human health
The Method is situated in	Basic Research
Type of method	In vitro - Ex vivo
Species from which cells/tissues/organs are derived	Rattus norvegicus

Type of cells/tissues/organs	rat liver epithelial cells

DESCRIPTION

Method keywords

liver

epithelial cells

Hepatocytes

cellular differentiation

Scientific area keywords

liver research

cellular differentiation

Method description

Rat liver epithelial cells are cultivated at 100% con?uency on 100 µg/mL rat tail collagen type I coated culture dishes in base medium and sequentially exposed to hepatogenic growth factors and cytokines. Base medium consisted of William's E medium without glutamine supplemented with 7.33 IE/mL benzyl penicillin, 50 µg/mL streptomycin sulphate, 1 mg/mL linoleic-acid bovine serum albumin, 0.1 mM L-ascorbic acid, 0.03 mM nicotinamide, 0.25 mM sodium pyruvate and 1.623 mM L-glutamine. The hepatic differentiation procedure is as follows: days 0–2: base medium + 2% (v/v) FBS + 20 ng/mL HGF; days 3–5: base medium + 30 ng/mL HGF + 0.5% (v/v) ITS; day 6–8: base medium + 30 ng/mL HGF + 0.25 % ITS + 20 µg/L dex; days 9–11: base medium + 20 ng/mL HGF + 20 µg/L dex; days 12–14: base medium + 10 ng/mL HGF + 20 µg/L dex + 10 ng/mL OSM and from day 15 onwards: base medium + 20 µg/L dex + 10 ng/mL OSM. Cell cultures are incubated at 33 °C in a 5 % CO2 humidified atmosphere. Media were completely changed every three days, unless otherwise defined.

Method status

History of use

Internally validated

Published in peer reviewed journal

PROS, CONS & FUTURE POTENTIAL

Advantages

Homogenous population of rat hepatocyte-like cells with biotransformation capacity comparable to primary rat hepatocytes.

REFERENCES, ASSOCIATED DOCUMENTS AND OTHER INFORMATION

References

De Kock J, Snykers S, Branson S, Jagtap S, Gaspar JA, Sachinidis A, Vanhaecke T, Rogiers V. (2012) A liver-derived rat epithelial cell line from biliary origin acquires hepatic functions upon sequential exposure to hepatogenic growth factors and cytokines. Curr Med Chem. 19(26):4523-33