UDC 615.27 DOI: 10.25808/08697698.2018.202.6S.077

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Prolonged three dimensional culture of primary hepatocytes form drug metabolism analysis

Key words: three dimensional cell culture, hepatocytes

Technical hurdles of primary hepatocyte culture are dedifferentiation, epithelial-mesenchymal transition, loss of function, and loss of proliferation. In this study, primary hepatocytes were cultured on poly(vinyl) alcohol (PVA) nanofibrous membrane with coculture of fibroblast in poly(caprolactone) nanofibrous scaffold. The hepatocytes adhered to PVA nanofiber membrane and formed spheroid upto 28 days. Cultured cells expressed E-cadherin and albumin during prolonged culture and maintained functions, including urea secretion and uptake of phenacetin. The functions of hepatocytes were enhanced by coculture of fibroblasts. The adherence of hepatocytes was increased using RGD-containing PVA nanofibers and cultured hepatocytes were grown in monolayer. Thus, our system can be used in drug metabolism analysis with culture primary hepatocytes.

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