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Folic acid induced acute kidney injury and recovery: Using HK2 cells as experimental model

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Folic acid-induced kidney injury has similar syndromes as human acute kidney injury, it is considered as an experimental model for evaluation of epithelial regeneration and interstitial fibrosis. We intended to make use of human proximal tubule cells (HK2) to test the damage and recovery after treating cells with folic acid (FA). HK2 cells were seeded in 96-well plates and incubated with FA (10 mM, 14 mM, 18 mM and 23 mM) in fetal bovine serum (FBS)-free Dulbecco's Modified Eagle's medium (DMEM) for 24 hours or 48 hours. Cells were then allowed to recover in DMEM with 10% FBS for up to 120 hours. MTT assays were performed and cell viability was calculated as percentage to non-treated cells. Cell viability was affected by both dose-dependent and time-dependent manners. It had a significantly decrease for 24 hours FA treatment at 18 mM and 23 mM ($p<0.05$). This pattern was similarly observed for 48 hours treatment. Cell viability was significantly decreased at 18 mM, 23 mM FA treated cells by massively 80% and 90% respectively after 48 hours incubation ($p<0.05$). During recovery, cell viability of 24 hours treated cells showed no significant difference to those of control after 48 hours recovery, and cell viability of 48 hours treated cells showed no significant difference to those of control after 72 hours recovery. To conclude, HK2 cells were able to respond to injury induced by FA in dose and time dependent pattern, and HK2 cells were capable to recover after injury.

Biography

Yihe Li graduated from the University of Nottingham in Nutrition in 2011. She is studying for her PhD in the Department of Nutritional Science at the University of Nottingham, under the supervision of Prof. David Gardner and Dr. Simon Welham. Her research focuses on the roles of genes involved in kidney recovery after acute kidney injury.

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