Co-culture of Hepatocytes and Kupffer Cells as a Model for Liver Inflammation.

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Hepatocytes and Kupffer cells can be activated by various ligands, such as LPS or IL-2, to produce pro-inflammatory cytokines and activate the immune system. The interplay between these two cell types is essential for proper modulation and the development of a full-fledged hepatic inflammatory response. In the liver, Kupffer cells are located on the sinusoidal side of hepatic parenchyma and use their stellate-like extensions for direct cell-to-cell contact with hepatocytes. This contact is essential for proper modulation and the development of a full-fledged hepatic inflammatory response.

MATERIALS AND METHODS

Hepatocytes: isolated from rat liver and cultured as monolayer cultures. Kupffer cells were isolated from rat liver using collagenase digestion and cultured as monolayer cultures. Both cell types were cultured in DMEM containing 10% FBS, 1% Pen/Strep, and 1% L-Glutamine. Co-cultures were performed at a ratio of 1:2 of Kupffer cells to hepatocytes, and treated with LPS or IL-2 for 72 hours. Following treatment, all cultures were analyzed for morphology, cytokine production by ELISA, and P450 mRNA expression (CYP3A and CYP1A2).

RESULTS

In the liver, Kupffer cells are located on the sinusoidal side of hepatic parenchyma and use their stellate-like cytoplasmic extensions for direct cell-to-cell contact with hepatocytes. This contact is essential for proper modulation and the development of a full-fledged hepatic inflammatory response. In the liver, Kupffer cells are located on the sinusoidal side of hepatic parenchyma and use their stellate-like cytoplasmic extensions for direct cell-to-cell contact with hepatocytes. This contact is essential for proper modulation and the development of a full-fledged hepatic inflammatory response.

CONCLUSIONS

Kupffer cells secrete potent mediators of the inflammatory response that control liver function and the homeostasis of the immune system. The specific functions of Kupffer cells in the liver are summarized in Table 1. The table shows that Kupffer cells are involved in the clearance of pathogens, the regulation of inflammation, and the maintenance of liver function.

REFERENCES


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