Kansas State University Research Foundation
TECHNOLOGY LICENSING PROFILE

Cell Media and Methods for the Cryopreservation and Recovery of Hepatocytes

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Description:

Fresh hepatocytes are used for *in vitro* liver toxicity testing since they possess intact hepatic functions. However, the sources for fresh liver tissue are very limited and fresh hepatocytes in suspension have limited life span with greater than 80% loss of viability after 2h of incubation at 37°C. Researchers at Kansas State University have developed cell media and a two-step process for the cryopreservation of hepatocytes to extend the life span and allow for preservation of hepatic functions, i.e. CYP activity and morphology. This allows researchers to have functional cells on demand.

Additionally, recovery of cryopreserved hepatocytes is often met with a loss of viability and functionality of cells. Researchers at K-State have also developed a recovery media and method to recover viable and fully functional hepatocytes for experimental use. Utilizing this kit, cells are recovered at a rate of >80% viability.

Advantages:

- No rapid freezing: The developed media prevents rapid freezing and ice crystal formation to prevent cell death.
- Improved cell viability: Recovered cells treated with this kit retain viability better than previous methods.
- Retains activity: Hepatocytes treated with this media kit retain activity during recovery.
- Use with multiple cell types: This kit works well with dog hepatocytes and has been further modified to be used with other organs, such as kidney, etc and for other species including humans.

Publications:

- "Mechanistic toxicity assessment of hexahydroisohumulone in canine hepatocytes, renal proximal tubules, bone marrow-derived mesenchymal stem cells, and enterocytes-like cells" Int J Vet Health Sci Res. 4(2): 88-103. Choi K, Koci J, Ortega MT, Jeffery B, Riviere JE and Monteiro-Riviere NA. (2016)
- "Oxidative stress response in canine in vitro liver, kidney and intestinal models with seven potential dietary ingredients" Toxicol. Lett. 241:49-59. Choi K, Ortega MT, Jeffery B, Riviere JE and Monteiro-Riviere NA. (2016)

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