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Exploring mesencyhmal stem cell derived exosome as a hepatoprotective agent in Drug-Induced Acute Liver Injury

Cheau Yih Tan
National University of Singapore, Singapore

Acute liver injury is a major clinical problem arising from both diseases and therapeutic misadventures. This issue not only translates into significant morbidities (and mortalities) worldwide, but also causes the repercussions of drug removal from market. Management of Drug-Induced Acute Liver Injuries (DIALI) is often limited to discontinuation of medication as there are no therapeutically proven hepatoprotective agents. Hitherto MSC-CM derived exosome was identified to play a vital functional role in tissue repair and regeneration. Nevertheless the hepatoprotection effect of exosome has never been demonstrated. Thus, our overarching aim is to determine if MSC-CM derived exosome is hepatoprotective and/or hepatoregenerative against different toxicants induced-acute liver injury models *in vitro*. Two toxicants of well-defined mechanism of toxicity, hydrogen peroxide or acetaminophen were used to induce acute injury in TAMH cells; while exosome were treated concurrently with the toxicants. Cell viability in the exosome treatment group was shown to increase significantly in both toxicant models. The regeneration markers during priming phase of liver regeneration, IL-6, TNF-α, iNOS, COX-2 and MIP-2 were elevated remarkably in the exosome treatment group. Higher cell proliferation rate was also observed in the exosome treatment group. Hence, MSC-derived exosomes is a promising hepatoprotective and/or hepatoregenerative agent for further characterization and may find useful applications in overcoming DIALI and other related liver dysfunction.

a0068305@nus.edu.sg