

Colitis in test mice responds to treatment with human umbilical cord-derived mesenchymal cells

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When laboratory mice were modeled with colitis and treated with human umbilical cord-derived mesenchymal cells, the cells homed in on the inflamed colon and effectively ameliorated colitis, reported a study published in a recent issue of *Cell Transplantation* (20:9), now freely available [online](#).

According to study corresponding author Dr. Zhong Chao Han of the Institute of Hematology, Chinese Academy of Sciences and Peking Union of Medical Sciences, Crohn's disease and [ulcerative colitis](#) are two forms of inflammatory bowel diseases with uncertain etiologies. Their study was designed to determine if human umbilical cord-derived mesenchymal cells (hUC-MSCs) would be therapeutic when transplanted to test mice modeled with acute colitis.

"Emerging data has shown that MSCs have broad and potent immunosuppressive activities," said Dr. Han. "Our study found that systematic administration of hUC-MSCs effectively attenuated the clinical and pathological severity of the induced colitis by several disease parameters, including body weight loss and infiltration of [inflammatory cells](#)."

Colitis was induced in the test animals by use of trinitrobenzene sulfonic acid (TNBS), which was found to induce high levels of pro-inflammatory cytokines. However, the increased expression of cytokines

interleukin (IL)-23 and IL-17 was "significantly reversed by hUC-MSC infusion."

"Although our study demonstrated that hUC-MSCs could inhibit the acute inflammatory process, the effect of the same treatment on [chronic inflammation](#) is an unknown and should be investigated," said Dr Han.

Additionally, the researchers reported that once the hUC-MSCs migrated to the inflamed colon, they remained there for several weeks, indicating to the researchers that the hUC-MSCs were not only "responsive to the cues sent by the injured colon tissues" but were also "well tolerated, even in the xeno-transplantation setting."

"Considering that hUC-MSCs can be readily isolated with no harm to donors and subsequently expanded rapidly in large quantities, they provide an excellent choice for future clinical applications," concluded Dr. Han and the study's co-authors.

"This study provides preliminary evidence that umbilical cord derived mesenchymal stem cells acutely reduces the inflammation that causes colitis," said Dr. Shinn-Zong Lin, professor of Neurosurgery and superintendent at the China Medical University Hospital of Taichung, Taiwan. "The next step will be to see if long term benefit can also be demonstrated".

More information: Liang, L.; Dong, C.; Chen, X.; Fang, Z.; Xu, J.; Liu, M.; Zhang, X.; Gu, D. S.; Wang, D.; Du, W.; Zhu, D.; Han, Z. C. Human umbilical cord mesenchymal stem cells ameliorate mice trinitrobenzene sulfonic acid (TNBS)-induced colitis. *Cell Transplant.* 20(9):1395-1408; 2011.

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