

INTISARI

Latar belakang: Atresia bilier merupakan penyakit kolangiodestruktif yang jika tidak ditangani akan menyebabkan kematian karena fibrosis hati progresif. Sekretom UC-MSC merupakan terapi regeneratif yang berperan dalam regenerasi jaringan dan perbaikan. Terapi ini diketahui berkontribusi dalam memodulasi respons inflamasi serta proses fibrogenesis.

Tujuan: Untuk mengetahui pengaruh pemberian sekretom UC-MSC terhadap ekspresi mRNA IL-6 hati, TNF- α hati, dan fraksi area fibrosis hati model hewan atresia bilier.

Metode: Tikus *Sprague Dawley* berusia 3 minggu dilakukan ligasi saluran empedu. Sekretom UC-MSC diberikan pada hari ke 15 dan 16 dengan berbagai tingkatan dosis. Dilakukan terminasi pada hari ke 29 pasca ligasi dan diambil organ hati untuk dilakukan pemeriksaan ekspresi mRNA IL-6 hati, TNF- α dan fraksi area fibrosis dengan pewarnaan *Sirius Red*.

Hasil: Ekspresi mRNA TNF- α hati dan fraksi area fibrosis pada kelompok ligasi saluran empedu lebih tinggi signifikan dibandingkan kelompok yang tidak diberi. Ekspresi mRNA IL-6 pada kelompok yang diberikan sekretom UC-MSC dosis 200 μ L dan 400 μ L lebih rendah tidak signifikan dibanding yang tidak diberi. Ekspresi mRNA TNF- α pada kelompok yang diberikan sekretom UC-MSC dosis 100 μ L, 200 μ L, dan 400 μ L lebih rendah signifikan dibanding kelompok yang tidak diberi (masing-masing $p = 0,0080$; $0,0074$; $0,0074$). Gambaran fraksi area kelompok yang diberikan sekretom UC-MSC dosis 100 μ L, 200 μ L, dan 400 μ L lebih rendah signifikan dibanding kelompok yang tidak diberi (masing-masing $p < 0,0001$).

Kesimpulan: Ekspresi mRNA TNF- α dan fraksi area fibrosis kelompok hewan model atresia bilier yang diberikan sekretom UC-MSC dosis 100 μ L, 200 μ L, dan 400 μ L lebih rendah signifikan dibanding kelompok yang tidak diberikan sekretom UC-MSC.

Kata kunci: Model Atresia Bilier, Fibrosis hati, Sekretom UC-MSC, TNF- α , *Sirius Red*

ABSTRACT

Background: Biliary atresia is a cholangiodestructive disease that, if left untreated, leads to mortality due to progressive liver fibrosis. The secretome of umbilical cord mesenchymal stem cells (UC-MSC) is a regenerative therapy that plays a role in tissue regeneration and repair. This therapy is known to contribute to modulating inflammatory responses and the fibrogenesis process.

Objective: To evaluate the effect of UC-MSC secretome administration on hepatic mRNA expression of IL-6 and TNF- α , as well as liver fibrosis area fraction in an experimental biliary atresia animal model.

Methods: Three-week-old Sprague Dawley rats underwent bile duct ligation. The UC-MSC secretome was administered on days 15 and 16 at varying doses. Termination was performed on day 29 post-ligation, and liver tissue was collected for analysis of hepatic mRNA IL-6 and TNF- α expression, as well as fibrosis area fraction using Sirius Red staining.

Results: Hepatic mRNA TNF- α expression and fibrosis area fraction were significantly higher in the bile duct ligation group compared to the untreated group. Hepatic mRNA IL-6 expression in the groups receiving UC-MSC secretome at doses of 200 μ L and 400 μ L was lower not significantly compared to the untreated group. Hepatic mRNA TNF- α expression in the groups receiving UC-MSC secretome at doses of 100 μ L, 200 μ L, and 400 μ L was significantly lower than in the untreated group ($p = 0.0080, 0.0074, \text{ and } 0.0074$, respectively). The fibrosis area fraction in the groups receiving UC-MSC secretome at doses of 100 μ L, 200 μ L, and 400 μ L was significantly lower than in the untreated group ($p < 0.0001$ for all comparisons).

Conclusion: Hepatic mRNA TNF- α expression and fibrosis area fraction in the biliary atresia animal model were significantly lower in the groups receiving UC-MSC secretome at doses of 100 μ L, 200 μ L, and 400 μ L compared to the untreated group.

Keywords: Biliary atresia model, liver fibrosis, UC-MSC secretome, TNF- α , Sirius Red