# Supplementary Materials for

## Human umbilical cord-derived mesenchymal stem cell therapy in patients with COVID-19: a phase 1 clinical trial

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**This PDF file includes:**

Figures. S1 to S4
Table S1

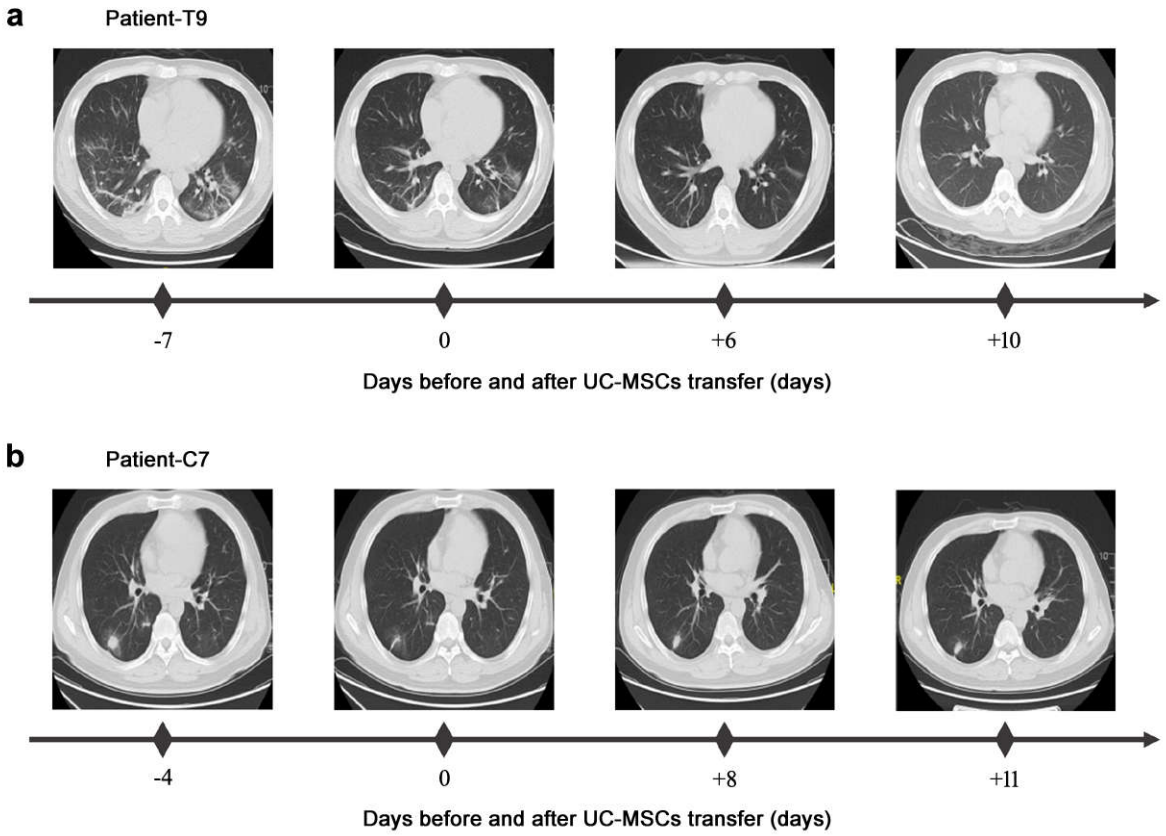


**Figure. S1.**

Representative chest computer tomography for the patients with COVID-19 with/without UC-MSCs transfusion.

**a** Representative chest CT scan images of severe patient 9 after UC-MSCs transfusion.
**b** Representative chest CT scan images of severe patient 7 in the control group.

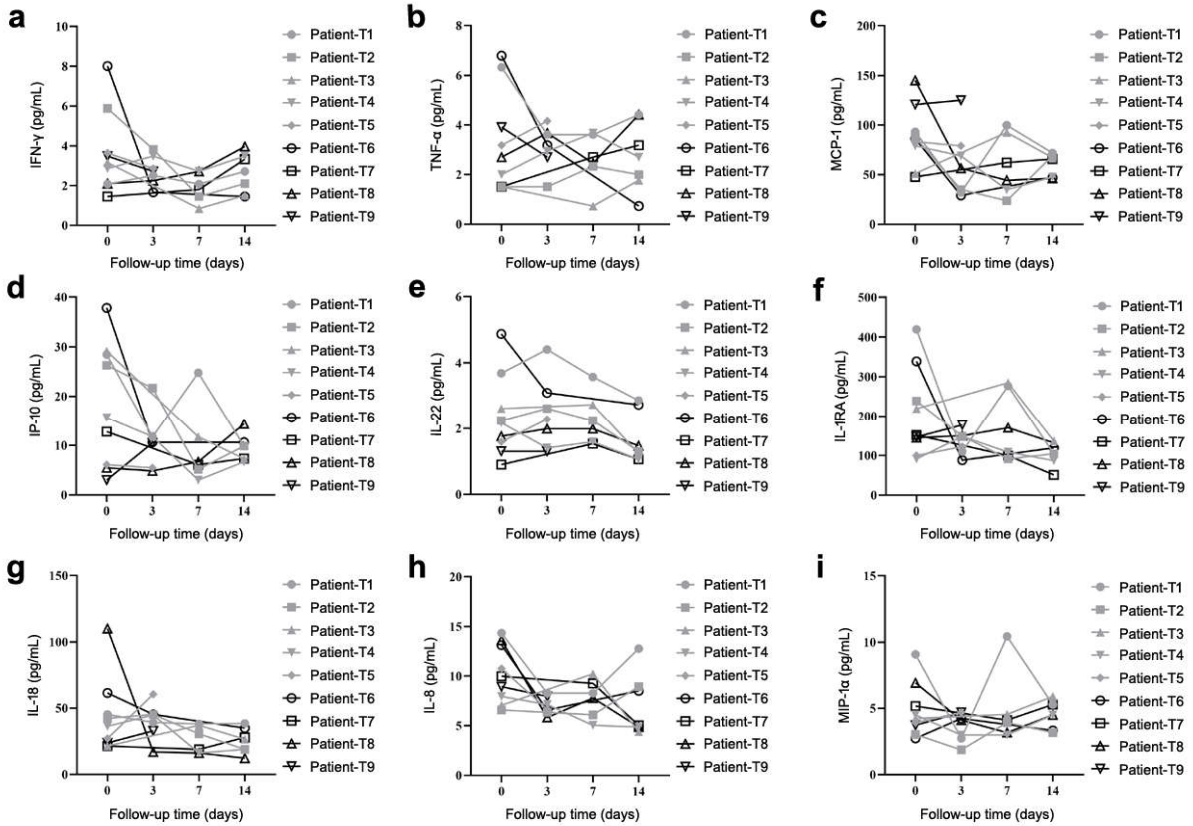


**Figure. S2.**

The dynamics of inflammatory cytokines in the UC-MSCs treatment group.

**a-i** The dynamics of plasma inflammatory cytokines within 14 days after UC-MSCs transfer are shown, including IL-6, IFN-γ, TNF-α, MCP-1, IP-10, IL-22, IL-IRA, IL-18, IL-8, and MIP-1α.

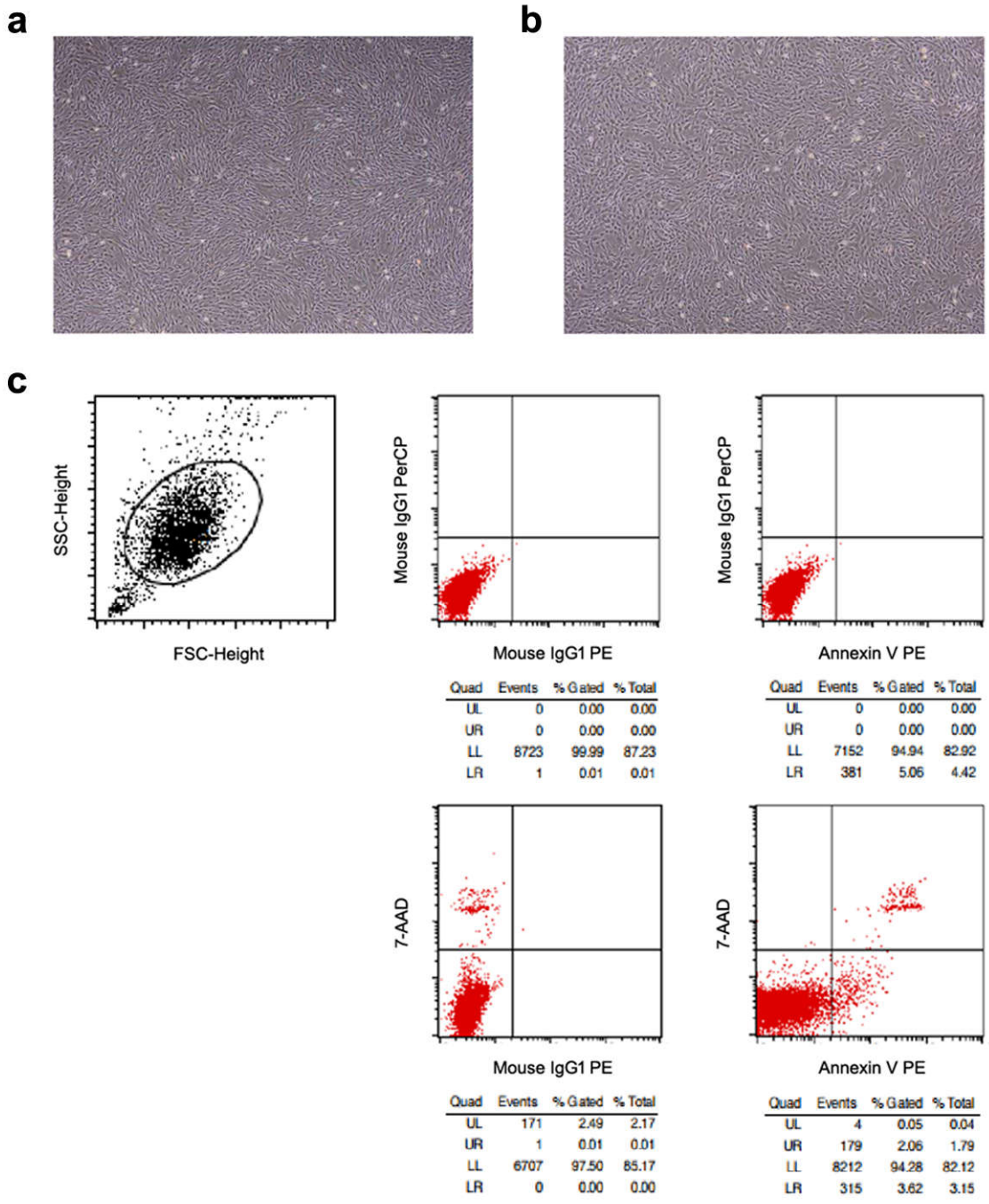


**Figure. S3.**

UC-MSCs morphology and viability.

**a,b** The UC-MSCs morphology (40 × ) and viability of working cell bank (passage 4) and final product (passage 5). **c** The apoptosis of UC-MSCs was detected using an Annexin V-/7-AAD-assay and the viability of the final product.

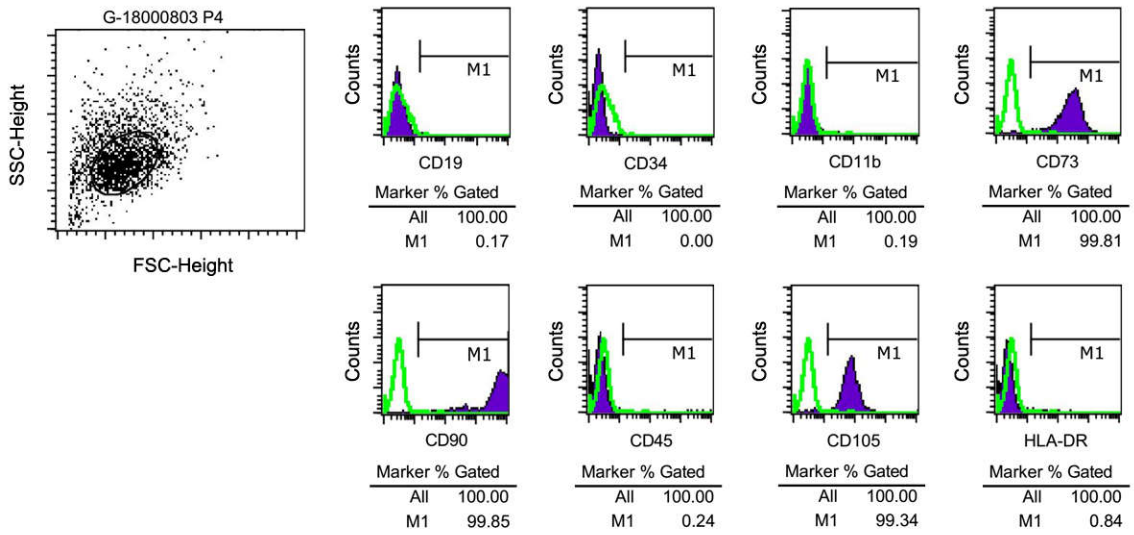


**Figure. S4.**

Surface markers of UC-MSCs.

The surface markers of UC-MSCs (passage 5) were analyzed using flow cytometry.

**Table S1.**

Details of clinical data among the patients with COVID-19 with/without UC-MSCs treatment at discharg

**Table S 1.** Details of clinical data among the patients with COVID-19 with/without UC-MSCs treatment at discharge.

| Patient number | UC-MSCs treatment group (n=9) | | | | | | | | | Control group (n=9) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | T1 | T2 | T3 | T4 | T5 | T6 | T7 | T8 | T9 | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 |
| Mechanical ventilation (days) | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 0 | 11 | 0 | 11 | 5 |
| Duration of oxygen support (days) | | | | | | | | | | | | | | | | | | |
| Low flow oxygen | 14 | 0 | 20 | 0 | 12 | 21 | 8 | 12 | 5 | 0 | 0 | 7 | 10 | 16 | 18 | 22 | 13 | 1 |
| High flow oxygen | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 1 | 2 | 0 | 0 | 0 | 10 | 0 | 6 | 2 | 3 | 20 |
| Duration of clinical symptoms（days） | | | | | | | | | | | | | | | | | | |
| Fever | 2 | 1 | 5 | 15 | 0 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 3 | 0 | 0 |
| Fatigue | 2 | 0 | 8 | 0 | 0 | 5 | 7 | 0 | 0 | 0 | 0 | 0 | 16 | 3 | 0 | 4 | 9 | 3 |
| Cough | 5 | 0 | 0 | 19 | 0 | 5 | 7 | 0 | 0 | 2 | 0 | 2 | 14 | 9 | 1 | 5 | 4 | 7 |
| Shortness of breath (days) | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 14 | 0 | 2 | 2 | 9 | 9 |
| Antibody at discharge (Titer of antibody, s/co) | | | | | | | | | | | | | | | | | | |
| Titer of IgM at discharge | 66.75 | 4.02 | 6.96 | 32.69 | 9.89 | 59.25 | 9.99 | 31.58 | 24.62 | / | 55.56 | / | 512.78 | 19.13 | 88.79 | 3.04 | 76.89 | 187.19 |
| Titer of IgG at discharge | 20.56 | 4.27 | 34.29 | 2.47 | 4.57 | 32.88 | 19.93 | 44.21 | 1.00 | / | 15.69 | / | 19.74 | 21.5 | 121.11 | 13.47 | 97.69 | 122.79 |
| Interval between admission and discharge (days) | 19 | 15 | 20 | 17 | 26 | 37 | 18 | 20 | 23 | 16 | 24 | 19 | 21 | 23 | 30 | 23 | 34 | 22 |