CLAIMS:

1. Use of a composition including mesenchymal stem cells (MSCs) in the manufacture of a medicament for alleviating myelofibrosis in a subject.

2. The use as claimed in claim 1, wherein the MSCs are selected from the group consisting of umbilical cord-derived mesenchymal stem cells (UCMSCs), bone marrow-derived mesenchymal stem cells (BMMSCs), adipose tissue-derived mesenchymal stem cells (AMSCs), dermis-derived mesenchymal stem cells (DMSCs), epidermis-derived mesenchymal stem cells (EMSCs), synovial membrane-derived mesenchymal stem cells (SMMSCs), dental tissue-derived mesenchymal stem cells (dental MSCs), lung-derived mesenchymal stem cells (LMSCs), and combinations thereof.

3. The use as claimed in claim 2, wherein the MSCs are UCMSCs.

4. The use as claimed in claim 3, wherein the UCSMCs are non-primed UCMSCs.

5. The use as claimed in claim 3, wherein the UCSMCs are primed UCMSCs.

6. The use as claimed in claim 5, wherein the primed UCSMCs are indoleamine-pyrrole 2,3-dioxygenase (IDO)-expressing UCMSCs.

7. The use as claimed in claim 6, wherein the IDO-expressing UCMSCs are

prepared by cultivation of non-primed UCMSCs in a culture medium supplemented with IFN-γ.

8. The use as claimed in claim 7, wherein the culture medium is further supplemented with a substance selected from the group consisting of vitamin, steroid, cytokine, double-stranded RNA, and histone deacetylase (HDAC) inhibitor.

9. The use as claimed in claim 8, wherein the vitamin is retinoic acid, the steroid is dexamethasone or budesonide, the cytokine is TNF-α, the double-stranded RNA is polyinosinic acid-polycytidylic acid, and the HDAC inhibitor is valproic acid.

10. The use as claimed in claim 1, wherein the subject is not subjected to myeloablative transplantation.

11. The use as claimed in claim 1, wherein the myelofibrosis is selected from the group consisting of primary myelofibrosis, post-essential thrombocythemia myelofibrosis, post-polycythemia vera myelofibrosis, and combinations thereof.

12. The use as claimed in claim 1, wherein the subject shows reduced level of bone marrow fibrosis or ameliorated inflammation after administering the medicament.

13. The use as claimed in claim 12, wherein the subject further shows

ameliorated splenomegaly or ameliorated anemia after administering the medicament.