egg membrane include cells having functions equivalent to mesenchymal stem cells. Accordingly, mesenchymal stem cells may be referred to as mesenchymal stromal cells.

PRIOR ART DOCUMENTS

Patent Document

[0006] [Patent Document 1] JP 2012-157263 A

[Patent Document 2] JP 2012-508733 A

Non Patent Document

[0007] [Non Patent Document 1] Folia Endocrinologica Japonica, 2018, Vol. 94, Suppl. November, pp. 1-11

[Non Patent Document 2] Proc. Natl. Acad. Sci. USA, 2020, Vol. 49, No. 117, pp. 31319-31330

[Non Patent Document 3] Pittenger F. M. et al., Science, 1999, 284, pp. 143-147

SUMMARY OF INVENTION

[0007a] In one aspect, provided herein is use of a prophylactic and/or therapeutic agent comprising mesenchymal stem cells in the manufacture of a medicament for treating diabetes, wherein the diabetes is caused by an immune checkpoint inhibitor.

Technical Problem

[0008] The present invention has been made in the circumstances as described above and aims to provide a therapeutic agent for diabetes that is highly effective on diabetes developed as a side effect of an administration of immune checkpoint inhibitors and that has a certain effect on many patients.

Solution to Problem

[0009] As a result of the intensive research to solve the problems, the present inventors have found that administering mesenchymal stem cells to patients of diabetes caused by immune checkpoint inhibitors can suppress development of the diabetes and can improve markedly symptoms of the diabetes developed. The present invention has been accomplished on the basis of these findings. In other word, the present invention that has been made to solve the problems is as follows:

[0010] [1] A prophylactic and/or therapeutic agent for diabetes, comprising mesenchymal stem cells.

[2] The prophylactic and/or therapeutic agent for diabetes according to claim 1, wherein the diabetes is diabetes caused by an immune checkpoint inhibitor.

[3] The prophylactic and/or therapeutic agent for diabetes according to [1] or [2], wherein the diabetes is diabetes caused by an anti-PD-1 antibody or an anti-PD-L1 antibody.

[4] The prophylactic and/or therapeutic agent for diabetes according to any of [1] to [3], wherein the mesenchymal stem cells are allogeneic to a subject.

[5] The prophylactic and/or therapeutic agent for diabetes according to any of [1] to [4], wherein the mesenchymal stem cells are derived from adipose, umbilical cord, or bone marrow.

[6] A kit for preventing and/or treating diabetes, comprising the therapeutic agent for diabetes according to any of [1] to [5], a container, and a label.

Advantageous Effects of Invention

[0011] Administering mesenchymal stem cells which are included in the prophylactic and/or therapeutic agents for diabetes of the present invention can suppress development of diabetes associated with immune checkpoint inhibitors and can improve markedly symptoms