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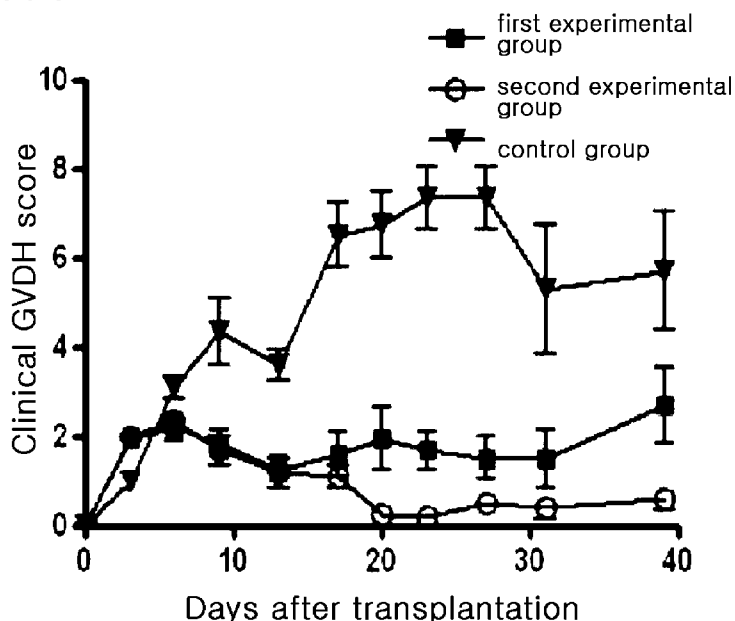
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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[Continued on next page]

(54) Title: CELL THERAPY COMPOSITION FOR PREVENTING OR TREATING IMMUNE DISEASE COMPRISING MES-ENCHYMAL STEM CELLS AND IMMUNOREGULATORY T-CELLS AS ACTIVE INGREDIENT

[Fig. 2]



(57) Abstract: The present invention relates to a cell therapy composition for preventing or treating immune disease comprising mesenchymal stem cells and immunoregulatory T-cells as an active ingredient. By infusing mesenchymal stem cells and immunoregulatory T-cells, which are the cellular therapeutic agent of the present invention, into bone marrow transplant animals, rejection to the host is suppressed after the engraftment of transplanted bone-marrow to thus obtain the effect of reducing graft-versus-host disease and immune disease. Moreover, the effect of such GVHD reduction is much greater than the one obtained when only mesenchymal stem cells are infused. Accordingly, the cell therapy composition of the present invention having the above-mentioned effects can be useful in the prevention or treatment of immune disease.

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18 October 2012

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

A. CLASSIFICATION OF SUBJECT MATTER*A61K 35/12(2006.01)i, A61K 35/28(2006.01)i, A61K 31/21(2006.01)i, A61P 37/06(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A61K 35/12; A61K 48/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: cell therapy, immune disease, mesenchymal stem cells, immunoregulatory T-cells, Tregs, CD4+CD25+, anti-CD3, TGF-b, anti-CD28, retinoic acid, graft versus host disease

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2008-0159998 A1 (THOMAS E. ICHIM) 03 July 2008 See abstract; claims 1-7, 15, 17, and 18; paragraphs [0063] and [0223]; examples.	1-6, 10-12
A	JAKUB TOLAR et al. 'Immune regulatory cells in umbilical cord blood: T regulatory cells and mesenchymal stromal cells' British Journal of Haematology, 2009, Vol. 147, No. 2, pp. 200-206, ISSN 0007-1048(p), 1365-2141(e). See the whole document.	1-6, 10-12
A	ROSA YANEZ et al. 'Adipose tissue-derived mesenchymal stem cells have in vivo immunosuppressive properties applicable for the control of the graft-versus-host disease' Stem Cells, 2006, Vol. 24, No. 11, pp. 2582-2591, ISSN 1066-5099. See abstract; results.	1-6, 10-12
A	ANDREA BACIGALUPO. 'Management of acute graft-versus-host disease' British Journal of Haematology, 2007, Vol. 137, No. 2, pp. 87-98, ISSN 0007-1048(p), 1365-2141(e). See p. 88, right-column - p. 89; p. 92.	1-6, 10-12



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

24 AUGUST 2012 (24.08.2012)

Date of mailing of the international search report

27 AUGUST 2012 (27.08.2012)

Name and mailing address of the ISA/KR

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2012/001194**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 7-9
because they relate to subject matter not required to be searched by this Authority, namely:
Claims 7-9 pertain to methods for treatment of the human body by therapy, and thus relate to a subject matter which this International Searching Authority is not required, under Article 17(2)(a)(i) of the PCT and Rule 39.1(iv) of the Regulations under the PCT, to search.
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2012/001194

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	C. MESSINA et al. 'Prevention and treatment of acute GvHD' Bone Marrow Transplantation, 2008, Vol. 41, Suppl. 2, pp. S65-S70, ISSN 0268-3369. See p. S65, right-column - p. S66.	1-6, 10-12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2012/001194Patent document
cited in search reportPublication
datePatent family
member(s)Publication
date

US 2008-0159998 A1

03.07.2008

US 8241621 B2

14.08.2012