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(54) Title: COSMETIC USE OF PLAKOGLOBIN-TYPE PROTEINS

(57) Abstract: The present invention relates to the use, in particular cosmetic and/or therapeutic use, of plakoglobin, of polypeptides derived from this protein or of analogs thereof, of a nucleic sequence encoding such a polypeptide or of an agent for modulating the activity, the stability or the expression of such a polypeptide, in particular for stimulating terminal epithelial differentiation. The invention also relates to the use of plakoglobin, of polypeptides derived from this protein or of analogs thereof, or of a nucleic sequence encoding such a polypeptide, as a marker for evaluating a state of an epithelium.



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INTERNATIONAL SEARCH REPORT

International application No

PCT/IB2008/055467

A. CLASSIFICATION OF SUBJECT MATTER

INV. A61K8/64 A61K38/10 A61K38/18 A61Q19/08 G01N33/68

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 A61Q G01N

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 practical, search terms used)

EPO-Internal, WPI Data, Sequence Search, CHEM ABS Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2004/028447 A (GENENTECH INC [US]; BODARY SARAH [US]; CLARK HILARY [US]; JACKMAN JANE) 8 April 2004 (2004-04-08) the whole document	1
X	US 4 603 146 A (KLIGMAN ALBERT M [US]) 29 July 1986 (1986-07-29) the whole document	1,2,7-10
X	US 2004/265268 A1 (JAIN DEEPAK [US]) 30 December 2004 (2004-12-30) paragraph [0024] - paragraph [0025] paragraph [0094] - paragraph [0096]; claims 1,2,5,6	1,2,5-10

☒ 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 document 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 another 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.

G document member of the same patent family

Date of the actual completion of the international search

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29/07/2009

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INTERNATIONAL SEARCH REPORT

International application No

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 101 33 196 A1 (BEIERSDORF AG [DE]) 23 January 2003 (2003-01-23) paragraphs [0022] - [0028] paragraph [0035]; claims 1,2; examples 1,3 -----	1,2,7-10
X	WO 2006/120681 A (DERMIPSOR LTD [IL]; HAREL AVIKAM [IL]; EVEN-CHEN ZEEV [IL]) 16 November 2006 (2006-11-16) page 9, line 26 - page 10, line 12; claims; examples -----	1,2,7-10
X	EP 1 529 522 A (OREAL [FR]) 11 May 2005 (2005-05-11) the whole document -----	1,2,7,8
X	US 2006/058387 A1 (AEBI ALBERT [CH]) 16 March 2006 (2006-03-16) paragraph [0020] - paragraph [0021]; examples paragraph [0054]; claims; examples -----	1,2,7,8
X	WO 00/06118 A (BERSHAD SUSAN [US]) 10 February 2000 (2000-02-10) page 1, line 6 - line 16; claims -----	1,2,7,8
X	EP 0 408 370 A (BRISTOL MYERS CO [US] SQUIBB BRISTOL MYERS CO [US]) 16 January 1991 (1991-01-16) page 4, line 28 - line 32; examples -----	1,2,7,8
A	WO 2006/068779 A (AVON PROD INC [US]; DRYER LAURENCE [US]; PTCHELINTSEV DMITRI [US]) 29 June 2006 (2006-06-29) the whole document -----	1-10
A	WO 2007/060117 A (BASF AG [DE]; BARG HEIKO [DE]; LIEBMANN BURGHARD [DE]; REENTS HEIKE [D]) 31 May 2007 (2007-05-31) the whole document -----	1-10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/IB2008/055467

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.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☒ Claims Nos.: 11-18
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:
see FURTHER INFORMATION sheet PCT/ISA/210
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:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers allsearchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search reportcovers 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.:
1-10

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.2

Claims Nos.: 11-18

Claim 1 is not clear because it covers the cosmetic use of an effective amount of at least one polypeptide having an amino acid sequence encoded by a nucleic acid sequence represented entirely or partly by a sequence represented by SEQ ID NO 1, or analogues or fragments thereof, or a nucleic acid sequence coding for such a peptide, for treating or preventing aged skin. This polypeptide is apparently plakoglobin. It is not clear how plakoglobin can stimulate the differentiation of the skin since according to the applicant, plakoglobin seems to have the opposite effect, ie a negative impact on the proliferation of cells. It thus appears that a reduction of plakoglobin in the skin would be desirable. This contradiction renders the claim unclear (Art.6 PCT).

Claim 1 is further lacking in clarity due to the terms "at least one agent for modulating the activity, the stability or the expression of such a polypeptide" in combination with "as an agent that is of use for preventing and/or treating aged skins". Agents which would have a stimulating effect on the activity or the polypeptide, or those agents which would stabilise it or stimulate its expression, all modulators in the sense of claim 1, would not apparently have the effect of stimulating epithelial differentiation and thus having the required anti-ageing effect. This contradiction renders the claim unclear (Art.6 PCT).

Further, the scope of claim 1 is not clear, because the abovementioned expressions are not precise. The applicant has indeed given some examples which are considered to fall within these definitions. However, the skilled person does not know which other agents are suitable. Expressions such as "ion chelators, sulfonic derivatives, urea derivatives, reducing agents, alpha- or beta-hydroxy acids" (description, page 12) for example are broad terms, for which it is not clear whether all such agents falling within the terms would be effective in the present methods. The scope of claim 1 is thus not only unclear but also speculative.

The same comments apply equally to claim 2.

Consequently, the search has been limited to those agents defined precisely, ie. the sequences having SEQ ID NO 1-5, the inhibitors of gene expression defined concretely on page 12 of the description, the inhibitors of protein expression defined concretely on page 12, the agents for regulating the stability of the polypeptide defined concretely on page 12, ie. ascorbic acid and nicotinamide.

The lack of clarity described above is such that the invention is not sufficiently disclosed, since it is not clear how the alleged invention works.

The applicant's attention is drawn to the fact that claims relating to inventions in respect of which no international search report has been

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

established need not be the subject of an international preliminary examination (Rule 66.1(e) PCT). The applicant is advised that the EPO policy when acting as an International Preliminary Examining Authority is normally not to carry out a preliminary examination on matter which has not been searched. This is the case irrespective of whether or not the claims are amended following receipt of the search report or during any Chapter II procedure. If the application proceeds into the regional phase before the EPO, the applicant is reminded that a search may be carried out during examination before the EPO (see EPO Guideline C-VI, 8.2), should the problems which led to the Article 17(2)PCT declaration be overcome.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-10

The cosmetic use of an effective amount of at least one polypeptide having an amino acid sequence encoded by a nucleic acid sequence represented entirely or partly by a sequence represented by SEQ ID NO 1, an analog thereof or a fragment thereof, of at least one nucleic sequence encoding such a polypeptide or of at least one agent for modulating the activity, the stability or the expression of such a polypeptide, as an agent that is of use for preventing and/or treating aged skins, or the use of an effective amount of at least one polypeptide having an amino acid sequence encoded by a nucleic acid sequence represented entirely or partly by a sequence represented by SEQ ID NO 1, an analog thereof or a fragment thereof, of at least one nucleic sequence encoding such a polypeptide or of at least one agent for modulating the activity, the stability or the expression of such a polypeptide, for the preparation of a therapeutic composition for preventing and/or treating aged skins.

2. claim: 11 and 16

The use of at least one polypeptide as defined in claims 1 to 4 as a tool for screening for biological or chemical compounds capable of modulating the expression and/or biological activity of said polypeptide and a method of screening for anti-ageing active agents.

3. claims: 12-15

The use of at least one polypeptide as defined in claims 1 to 4 or at least one sequence encoding said polypeptide as a tool for characterising in vitro or ex vivo an aged state of an epithelium and a method for characterising an aged state of an epithelium.

4. claim: 17

Cosmetic method for characterizing the effectiveness of a cosmetic or therapeutic treatment aiming to compensate for the signs of skin aging, comprising at least the qualitative or quantitative characterization of the expression and/or of the biological activity of a polypeptide as defined according to one of claims 1 to 4.

5. claim: 18

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

The use of an effective amount of at least one polypeptide as defined according to one of claims 1 to 4, or of at least one agent for modulating the expression of said polypeptide, for the preparation of and/or for improving a pluristratified cell model, in particular a reconstructed skin model.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/IB2008/055467

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