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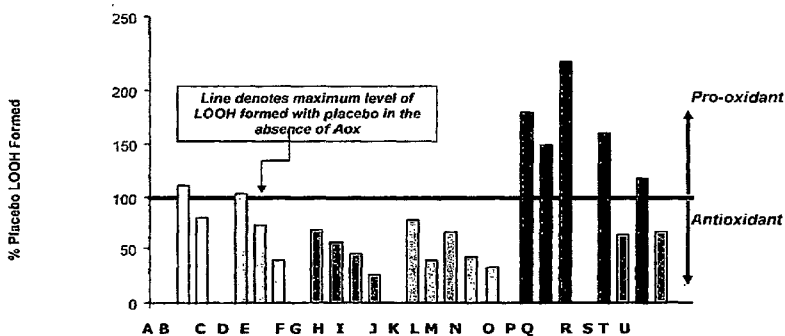
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Declarations under Rule 4.17:

[Continued on next page]

(54) Title: METHOD OF SELECTING ANTIOXIDANTS FOR USE IN TOPICALLY APPLIED COMPOSITIONS



- A - nAcetyl Cysteine (NAC) 0.25%
- B - Phyllanthus Emblica Fruit Extract (Emblica) 0.1%
- C - Vitamin E (Vit. E) 0.05%
- D - Vit. E 0.1%
- E - Vit. E 0.25%
- F - Vit. E 0.05%, Emblica 0.1%
- G - Vit. E 0.1%, Emblica 0.1%
- H - Vit. E 0.25%, Emblica 0.1%
- I - Vit. E 0.5%, Emblica 0.1%
- J - Green Tea Extract (GT) 0.1%
- K - Vit. E 0.25%, GT 0.1%
- L - Tetrahydrocurcuminoids (THC) 0.25%
- M - Vit. E 0.25%, THC 0.25%
- N - THC 0.5%
- O - Rosemary officinalis oleoresin (ROO) 0.1%
- P - Rosa Gallica extract (Rosa G) 1.0%
- Q - Bioactive Photosynthetic Complex from Green Plants (BPSC) 0.1%
- R - Thermus Thermophilus ferment (Thermus) 1%
- S - Thermus 1%, Vit. E 0.25%
- T - Ergothiotaine (ET) 0.1%
- U - ET 0.1%, Vit. E 0.25%

(57) Abstract: Antioxidant-containing compositions and methods for confirming antioxidant activity of a composition formulated for topical application to skin. Methods for testing a composition for ability to inhibit both ultraviolet radiation-induced lipid peroxidation on skin and ultraviolet radiation-induced reactive oxygen species formation in the stratum corneum. Compositions and methods for treating and preventing photodamage to skin.

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— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))* — *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))*

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International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. G01N33/50 A61Q17/04 A61K8/67 A61K8/37 A61K8/97

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)

G01N A61Q A61K

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, EMBASE, BIOSIS, 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	US 6 254 898 B1 (BRAGAGLIA ANTHONY JOSEPH [US]) 3 July 2001 (2001-07-03)	1-2,4
Y	the whole document examples 1,4 column 1, lines 15-20 column 2, lines 10-20	3,5-7
X	US 2007/140996 A1 (DAMIANI ELISABETTA [IT] ET AL) 21 June 2007 (2007-06-21)	1-2,4
A	the whole document paragraph [0004] paragraph [0053] - paragraph [0055]	3,5-7
Y	US 4 975 272 A (VOYT WALTER F [US]) 4 December 1990 (1990-12-04) the whole document examples 1,3 column 14, line 37 - column 16	5-7
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 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.
- *&* document member of the same patent family

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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.
Y	<p>HANSON KERRY M ET AL: "Observation and quantification of ultraviolet-induced reactive oxygen species in ex vivo human skin" PHOTOCHEMISTRY AND PHOTOBIOLOGY, vol. 76, no. 1, July 2002 (2002-07), pages 57-63, XP002519358 ISSN: 0031-8655 the whole document</p>	3
X	<p>WO 03/007906 A1 (MERCK PATENT GMBH [DE]; CHAUDHURI RATAN K [US]) 30 January 2003 (2003-01-30) page 50, line 1 - line 8</p>	8-16, 23-32, 35-36
X	<p>WO 2006/124991 A1 (PROCTER & GAMBLE [US]; BISSETT DONALD LYNN [US]) 23 November 2006 (2006-11-23)</p> <p>examples A-I</p>	8-10, 12-13, 15-18, 20-21, 23, 25-26, 28-36
X	<p>EP 1 591 105 A1 (STADA ARZNEIMITTEL AG [DE]) 2 November 2005 (2005-11-02)</p> <p>example 2</p>	8-10, 12-13, 15-16, 31-32
X	<p>WO 2005/016303 A2 (SCHERING PLOUGH HEALTHCARE [US]; KARPOV INNA [US]) 24 February 2005 (2005-02-24)</p> <p>example 2</p>	8-10, 12-13, 15-16, 22, 31-32
X	<p>US 2007/003536 A1 (ZIMMERMAN AMY C [US] ET AL) 4 January 2007 (2007-01-04) examples 7-11, 12D</p>	8-10, 13, 16, 31-32
X	<p>US 2007/231285 A1 (CHAUDHURI RATAN K [US]) 4 October 2007 (2007-10-04) paragraph [0087]</p>	8, 13, 16, 31-32
X	<p>US 2007/020203 A1 (CHAUDHURI RATAN K [US] ET AL) 25 January 2007 (2007-01-25) examples 4, 5</p>	8-36
X	<p>EP 1 344 516 A1 (COGNIS IBERIA SL [ES]) 17 September 2003 (2003-09-17)</p> <p>examples 2-9; table 1</p>	8, 12-13, 15-16, 31-32
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/031538

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/37788 A1 (ALTICOR INC [US]; MAYNE JAMES R [US]) 31 May 2001 (2001-05-31) examples 1-4	8-16, 31-32
X	WPI WORLD PATENT INFORMATION DERWENT, DERWENT, GB, vol. 30, no. 95, 224715, 11 May 1994 (1994-05-11), XP002003279 abstract & CN 1 086 532 A (NANYUAN YONGFANG DEV CO LTD SH [CN]) 11 May 1994 (1994-05-11)	8, 13, 16, 31-32

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2009/031538

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.:
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:

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 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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-7

Testing methods

2. claims: 8-16, 31-32

first antioxidant composition and methods of application

3. claims: 17-21, 33-34

second antioxidant composition and methods of application

4. claim: 22

third antioxidant composition

5. claims: 23-30, 35-36

fourth antioxidant composition and methods of application

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2009/031538

Patent document cited in search report	Publication date	Publication date	Patent family member(s)	Publication date
US 6254898	B1	03-07-2001	NONE	
US 2007140996	A1	21-06-2007	NONE	
US 4975272	A	04-12-1990	NONE	
WO 03007906	A1	30-01-2003	AT 343367 T DE 60215656 T2 EP 1406582 A1 EP 1952843 A1 ES 2272738 T3 JP 2005503365 T	15-11-2006 23-08-2007 14-04-2004 06-08-2008 01-05-2007 03-02-2005
WO 2006124991	A1	23-11-2006	EP 1881814 A1 US 2006263321 A1	30-01-2008 23-11-2006
EP 1591105	A1	02-11-2005	NONE	
WO 2005016303	A2	24-02-2005	BR PI0413317 A CA 2534091 A1 EP 1660021 A2 JP 2007501249 T US 2005031655 A1	10-10-2006 24-02-2005 31-05-2006 25-01-2007 10-02-2005
US 2007003536	A1	04-01-2007	WO 2008016842 A1	07-02-2008
US 2007231285	A1	04-10-2007	NONE	
US 2007020203	A1	25-01-2007	NONE	
EP 1344516	A1	17-09-2003	WO 03075861 A1 JP 2005535566 T US 2005158396 A1	18-09-2003 24-11-2005 21-07-2005
WO 0137788	A1	31-05-2001	AU 1784301 A CN 1424900 A EP 1231886 A1	04-06-2001 18-06-2003 21-08-2002
CN 1086532	A	11-05-1994	NONE	