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CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,
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Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

— 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
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14 April 2011

(54) Title: POLYAMINE ACTIVATORS (S PERMINE, S PERMIDINE) OF THE AUTOPHAGIC PATHWAY

(57) Abstract: A polyamine compound of the group consisting of putrescine, spermine, spermidine, cholesteryl spermine, spermi-
dine trihydrochloride, spermidine phosphate hexahydrate, spermidine phosphate hexahydrate and 1, 4 -butanediamine N- (3
-aminopropyl) -monohydrochloride or derivatives thereof or combinations thereof which are effective to activate the cellula-
rautophagic pathway for use in a treatment to increase the survivability, lifespan or the life expectancy of an invertebrate
animal/poikilotherm invertebrate animal, or to increase the average lifespan of a population of such invertebrate animals.



WO 2010/081204 A3

INTERNATIONAL SEARCH REPORT

International application No PCT/BE2010/000002

A. CLASSIFICATION OF SUBJECT MATTER
 INV. A61K31/132 A61P43/00

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 A61P

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, BIOSIS, EMBASE, FSTA, WPI Data, 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	MITSUHASHI JUN: "Polyamine as a growth promoter for cultured insect cells" IN VITRO CELLULAR AND DEVELOPMENTAL BIOLOGY ANIMAL, vol. 34, no. 8, September 1998 (1998-09), pages 619-621, XP002608168 ISSN: 1071-2690 page 620, right-hand column, lines 21-35 ----- -/--	1-20,28, 29

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

Date of the actual completion of the international search

5 November 2010

Date of mailing of the international search report

11/02/2011

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/BE2010/000002

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 all searchable 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.:

1-20, 28, 29

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/BE2010/000002

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>QISHENG S ET AL: "Spermine and polylysine enhanced phosphorylation of calmodulin and tubulin in an insect endocrine gland" MOLECULAR AND CELLULAR ENDOCRINOLOGY, vol. 99, no. 1, 1 February 1994 (1994-02-01), pages 1-10, XP025829935 ELSEVIER IRELAND LTD, IE ISSN: 0303-7207 DOI: 10.1016/0303-7207(94)90139-2 [retrieved on 1994-02-01] abstract page 7, right-hand column, last paragraph</p>	1-20,28, 29
X	<p>CAYRE MYRIAM ET AL: "Specific requirement of putrescine for the mitogenic action of juvenile hormone on adult insect neuroblasts" PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, vol. 94, no. 15, 1997, pages 8238-8242, XP002608169 ISSN: 0027-8424 the whole document</p>	1-20,28, 29
X,P	<p>WO 2009/093454 A1 (JICHI MEDICAL UNIVERSITY [JP]; SODA KUNIYASU [JP]) 30 July 2009 (2009-07-30) abstract</p>	1-20,28, 29
Y	<p>COCHON ET AL: "Differential effects of paraquat on oxidative stress parameters and polyamine levels in two freshwater invertebrates" ECOTOXICOLOGY AND ENVIRONMENTAL SAFETY, vol. 68, no. 2, 20 September 2007 (2007-09-20), pages 286-292, XP022262105 ACADEMIC PRESS, SAN DIEGO, CA, US ISSN: 0147-6513 DOI: 10.1016/J.ECOENV.2006.11.010 page 286, right-hand column, last paragraph first full paragraph page 290, right-hand column penultimate and last paragraph page 292, left-hand column</p>	1-20,28, 29

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INTERNATIONAL SEARCH REPORT

International application No

PCT/BE2010/000002

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>COMBEST W L ET AL: "Polyamines modulate multiple protein phosphorylation pathways in the insect prothoracic gland" MOLECULAR AND CELLULAR ENDOCRINOLOGY, vol. 83, no. 1, 1 January 1992 (1992-01-01), pages 11-19, XP025777701 ELSEVIER IRELAND LTD, IE ISSN: 0303-7207 DOI: 10.1016/0303-7207(92)90190-H [retrieved on 1992-01-01] abstract page 15, right-hand column, paragraph 1 - page 16, left-hand column, paragraph 2; figures 5-7 page 18, right-hand column, last paragraph</p>	1-20,28, 29
Y	<p>GASPARINI STEPHANE ET AL: "The free guanidine and polyamine pools of bivalve mollusks in relation to their ecology" BIOCHEMICAL SYSTEMATICS AND ECOLOGY, vol. 28, no. 3, March 2000 (2000-03), pages 209-218, XP002608170 ISSN: 0305-1978 the whole document</p>	1-20,28, 29
Y	<p>SCHIPPER RAYMOND G ET AL: "Involvement of polyamines in apoptosis. Facts and controversies: Effectors or protectors?" SEMINARS IN CANCER BIOLOGY, vol. 10, no. 1, February 2000 (2000-02), pages 55-68, XP002608171 ISSN: 1044-579X the whole document</p>	1-20,28, 29
X	<p>HERNANDEZ S.: "Polyamines as a defense mechanism against lipoperoxidation in Trypanosoma cruzi" ACTA TROPICA, vol. 98, 1 January 2006 (2006-01-01), pages 94-102, XP002607628 DOI: 10.1016/j.actatropica.2006.02.005 abstract; figures 1-3 page 95, left-hand column, paragraph 4</p>	1-20,28, 29

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/BE2010/000002

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2009093454	A1	NONE	

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-20, 28, 29

use of polyamine to increase the survivability, lifespan or the life expectancy of a invertebrate animal/piokilotherm invertebrate animal

2. claims: 21-27, 30

use of polyamine to increase the survivability, lifespan or the life expectancy of a metamorphosing juvenile inveterbrate
