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[CA/CA]; 222-22 Elkhorn Drive, Toronto, Ontario M2K 1J4 (CA). **ROTSTEIN, Ori, D.** [CA/CA]; 14 Bennington Heights, Toronto, Ontario M4G 1A6 (CA).

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(74) Agent: **SHARPE, Paul, S.**; Marks & Clerk, P.O. Box 957, Station B, Ottawa, Ontario K1P 5S7 (CA).

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(71) Applicant (*for all designated States except US*): **HER MAJESTY THE QUEEN** as represented by **THE MINISTER OF NATIONAL DEFENCE OF HER MAJESTY'S CANADIAN GOVERNMENT** [CA/CA]; Directorate of Intellectual Property, National Defence Headquarters, 101 Colonel by Drive, Ottawa, Ontario K1A 0K2 (CA).

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(72) Inventors; and

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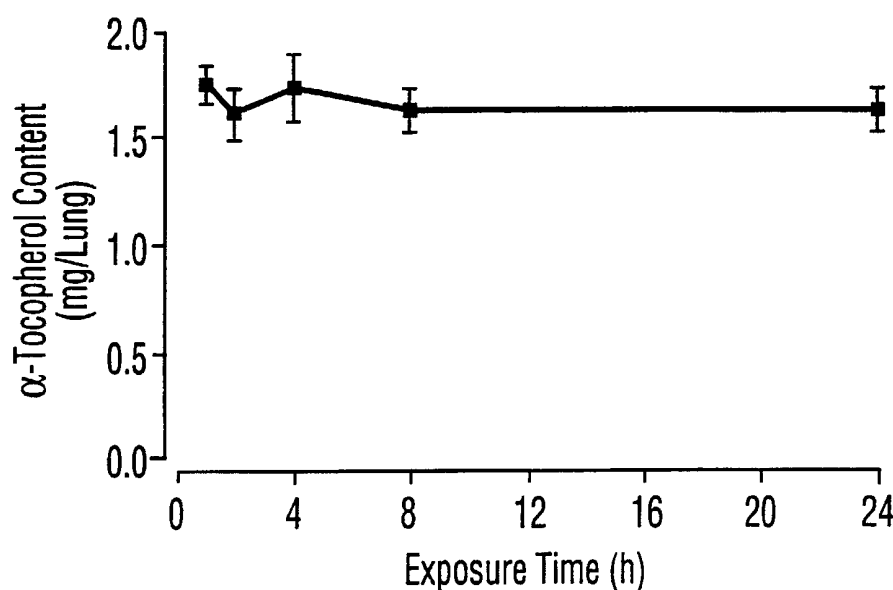
(75) Inventors/Applicants (*for US only*): **SHEK, Pang, N.** [CA/CA]; 180 Harlandale Avenue, Toronto, Ontario M2N 1P4 (CA). **SUNTRES, Zacharias, E.** [CA/CA]; 62 Hartsdale Drive, Toronto, Ontario M9R 2S7 (CA). **FAN, Jie**

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(54) Title: DELIVERY OF LIPOSOMAL-ENCAPSULATED ANTIOXIDANTS AND APPLICATIONS THEREOF



(57) Abstract: A liposomal composition comprises a hydrophilic sulfhydryl agent and a lipophilic antioxidant, e.g., N-acetyl cysteine and/or α -tocopherol, and a method of delivery by contacting a pulmonary tissue of a mammal with the liposomal composition to achieve a prolonged antioxidant effect.



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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/CA 00/00806

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61K9/127 A61K31/198 A61K31/355

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)

IPC 7 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)

WPI Data, PAJ, EPO-Internal, CHEM ABS Data, BIOSIS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 94 13265 A (SMITH) 23 June 1994 (1994-06-23) page 1, line 1 -page 3, line 29 page 5, line 3 -page 11, line 5 ---	1-30
A	T. MOTOYAMA ET AL.: "Synergistic inhibition of oxidation in dispersed phosphatidylcholine liposomes by a combination of vitamin E and cysteine" ARCHIVES OF BIOCHEMISTRY AND BIOPHYSICS, vol. 270, no. 2, 1 May 1989 (1989-05-01), pages 655-661, XP002156057 New York (US) page 655, paragraph 1 --- -/--	1-25



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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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.

8 document member of the same patent family

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European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Benz, K

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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.
A	CHEMICAL ABSTRACTS, vol. 99, no. 25, 19 December 1983 (1983-12-19) Columbus, Ohio, US; abstract no. 206087m, L. KHAIRY ET AL.: "reversal of acetaminophen intoxication with an N-acetylcysteine-liposome preparation" page 68; column 1; XP002156058 abstract & RES. COMMUN. CHEM. PATHOL. PHARMACOL., vol. 42, no. 1, 1983, pages 157-160, -----	1-25
A	US 5 637 315 A (ZERN ET AL.) 10 June 1997 (1997-06-10) claims 1-4 -----	1-30

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/CA 00/00806

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9413265 A	23-06-1994	AU 5748294 A CA 2151495 A EP 0673241 A	04-07-1994 23-06-1994 27-09-1995
US 5637315 A	10-06-1997	NONE	