

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
12 February 2004 (12.02.2004)

PCT

(10) International Publication Number
WO 2004/012652 A3

(51) International Patent Classification⁷: **A61C 8/00**

(21) International Application Number:
PCT/IL2003/000635

(22) International Filing Date: 31 July 2003 (31.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/400,114 2 August 2002 (02.08.2002) US

(71) Applicants (for all designated States except US): **YISSUM RESEARCH DEVELOPMENT COMPANY OF THE HEBREW UNIVERSITY OF JERUSALEM** [IL/IL]; Hi Tech Park, The Edmond J. Safra Campus, The Hebrew University of Jerusalem, Givat Ram, 91 390 Jerusalem (IL). **MOR RESEARCH APPLICATIONS LTD.** [IL/IL]; 23 HaSivim Street, Kiryat Matalon, 49 170 Petach Tikva (IL). **RAMOT AT TEL AVIV UNIVERSITY LTD.** [IL/IL]; 32 Haim Levanon Street, 69 975 Tel Aviv (IL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ATLAS, Daphne**

[IL/IL]; 11 Burla Street, 93 714 Jerusalem (IL). **MELAMED, Eldad** [IL/IL]; 44 Tagor Street, 69 341 Tel Aviv (IL). **OFFEN, Daniel** [IL/IL]; Kfar HaRoe 38 955 (IL).

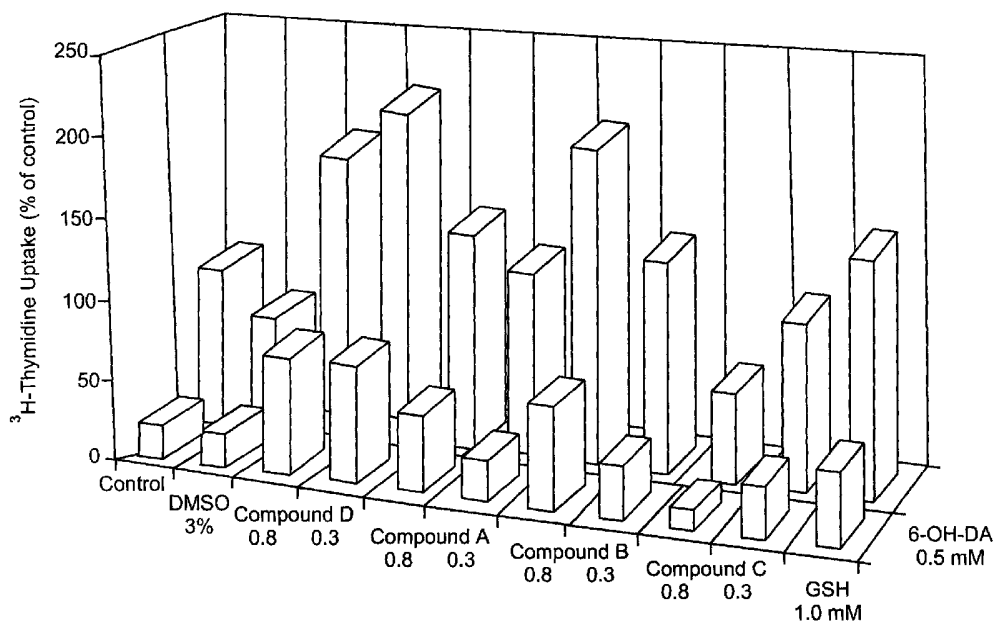
(74) Agent: **G. E. EHRLICH (1995) LTD.**; 11 Menachem Begin Street, 52 521 Ramat Gan (IL).

(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,

[Continued on next page]

(54) Title: TREATMENT OF MULTIPLE SCLEROSIS WITH BRAIN TARGETED ANTI OXIDANT COMPOUNDS



(57) Abstract: A method of treating multiple sclerosis, the method comprises administering to a subject in need thereof a therapeutically effective amount of a compound, the compound having: (a) a combination of molecular weight and membrane miscibility properties for permitting the compound to cross the blood brain barrier of the organism; (b) a readily oxidizable chemical group for exerting antioxidation properties; and (c) a chemical make-up for permitting the compound or its intracellular derivative to accumulate within the cytoplasm of cells.



SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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.

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

(88) Date of publication of the international search report:

29 April 2004

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IL03/00653

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : A61C 8/00

US CL : 433/173

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)

U.S. : 433/173, 174

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)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,533,898 A (MENA) 09 July 1996 (09.07.1996), see entire document.	1-4
---		-----
Y		5-15
X	US 5,538,428 A (STAUBLI) 23 July 1996 (23.07.1996), see entire document.	14, 15
---		-----
Y		5-13
Y	US 5,904,483 A (WADE) 18 May 1999 (18.05.1999), see entire document.	11-13
X	US 5,967,783 A (URA) 19 October 1999 (19.10.1999), see entire document.	1-4
---		-----
Y		5-15



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	"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
"E" earlier application or patent published on or after the international filing date	"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
"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)	"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
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

05 December 2003 (05.12.2003)

Date of mailing of the international search report

15 MAR 2004

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Ralph Lewis

Telephone No. (703) 308-0770