

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
3 August 2000 (03.08.2000)

PCT

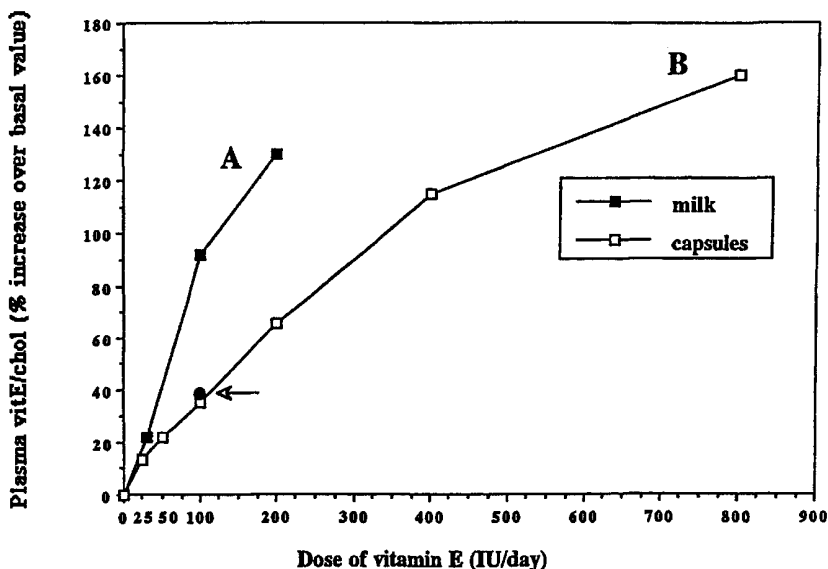
(10) International Publication Number  
WO 00/44237 A3

- (51) International Patent Classification<sup>7</sup>: A23C 9/158, A23L 1/302, A23C 11/04, 19/09
- (21) International Application Number: PCT/US00/01597
- (22) International Filing Date: 21 January 2000 (21.01.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/117,847 29 January 1999 (29.01.1999) US  
09/325,258 3 June 1999 (03.06.1999) US
- (71) Applicant (for all designated States except US): BRANDEIS UNIVERSITY [US/US]; 415 South Street, Waltham, MA 02254-9110 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): PERLMAN, Daniel [US/US]; 94 Oakland Avenue, Arlington, MA 02478 (US). HAYES, Kenneth, C. [US/US]; 68 Washburn Avenue, Wellesley, MA 02181 (US).
- (74) Agent: AMES, Wesley, B.; Lyon & Lyon LLP, 633 West Fifth Street, Suite 4700, Los Angeles, CA 90071-2066 (US).
- (81) Designated States (national): AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, 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, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:  
— With international search report.

[Continued on next page]

(54) Title: HYPER-ABSORPTION OF VITAMIN E DISPERSED IN MILKS



(57) Abstract: A milk product including a level of at least 31IU vitamin E per serving of said product which can conveniently provide at least 100 IU of vitamin E per day to an individual ingesting the product. The vitamin E is uniformly microdispersed throughout the product, and ingestion of at least 100 IU of vitamin E per day in the product is sufficient to cause the fasting plasma vitamin E/cholesterol ratio in human subjects to be elevated at least 50 % above the basal fasting level of vitamin E measured in the same subjects consuming no vitamin E dietary supplements. A method for elevating the plasma vitamin E level at least 50 % in human subjects is also described. The method includes ingesting a milk product as described.

WO 00/44237 A3



---

**(88) Date of publication of the international search report:**  
15 February 2001

*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

Int'l. Application No  
PCT/US 00/01597

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 A23C9/158 A23L1/302 A23C11/04 A23C19/09

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 A23C A23L

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, FSTA

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 223 285 A (DEMICHELE STEPHEN J ET AL) 29 June 1993 (1993-06-29) column 15 -column 16; table 7 ---	1-26, 31-34
X	EP 0 129 418 A (GLAXO GROUP LTD) 27 December 1984 (1984-12-27)  page 21 -page 23; claims 1,5 ---	8-11, 13, 17-21, 23, 25, 31, 33, 34
X	US 5 447 741 A (GOLDMAN MARC S) 5 September 1995 (1995-09-05)  column 3, line 11 -column 4, line 26; claims 42, 52, 53; example 2 --- -/--	1, 8-21, 23-26, 31-34

Further documents are listed in the continuation of box C.       Patent family members are listed in annex.

\* Special categories of cited documents :

<p>*A* document defining the general state of the art which is not considered to be of particular relevance</p> <p>*E* earlier document but published on or after the international filing date</p> <p>*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)</p> <p>*O* document referring to an oral disclosure, use, exhibition or other means</p> <p>*P* document published prior to the international filing date but later than the priority date claimed</p>	<p>*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</p> <p>*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</p> <p>*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.</p> <p>*G* document member of the same patent family</p>
--	--

Date of the actual completion of the international search  <b>5 July 2000</b>	Date of mailing of the international search report  <b>28. 08. 2000</b>
---	---

Name and mailing address of the ISA 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  <b>Desmedt, G</b>
--	---

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/01597

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 870 435 A (TAIYO KAGAKU KK) 14 October 1998 (1998-10-14) example 4 ---	25, 31
A	WO 94 05159 A (LA SOCIETE COOPERATIVE MONT-BLANC) 17 March 1994 (1994-03-17) page 16; claims 1,2 ---	30
A	US 5 393 551 A (P. ARCADIPANE) 28 February 1995 (1995-02-28) examples 1-3; table 1 -----	1, 25, 30

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US 00/01597

## Box I Observations where certain claims were found unsearchable (Continuation of Item 1 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:  

Although claims 4,5,27-30 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
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 II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

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 fee, this Authority did not invite payment of any additional fee.
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.

No protest accompanied the payment of additional search fees.

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/01597

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5223285    A	29-06-1993	AU 3614693 A	08-11-1993
		EP 0656754 A	14-06-1995
		JP 8011048 B	07-02-1996
		JP 7501457 T	16-02-1995
		MX 9301787 A	28-02-1994
		NZ 249397 A	26-01-1996
		WO 9319624 A	14-10-1993
EP 0129418    A	27-12-1984	AT 37651 T	15-10-1988
		AU 577049 B	15-09-1988
		AU 2941784 A	20-12-1984
		CH 660284 A	15-04-1987
		DE 3474402 D	10-11-1988
		GB 2142518 A,B	23-01-1985
		IE 55320 B	01-08-1990
		NZ 208538 A	31-08-1987
		US 4753926 A	28-06-1988
		ZA 8404548 A	30-01-1985
US 5447741    A	05-09-1995	US 5558897 A	24-09-1996
		US 5753295 A	19-05-1998
EP 0870435    A	14-10-1998	AU 4398897 A	24-04-1998
		US 6074675 A	13-06-2000
		CA 2239035 A	09-04-1998
		WO 9814072 A	09-04-1998
WO 9405159    A	17-03-1994	BE 1006217 A	14-06-1994
US 5393551    A	28-02-1995	NONE	