

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
16 December 2004 (16.12.2004)

PCT

(10) International Publication Number
WO 2004/108792 A3

(51) International Patent Classification⁷: **C08G 63/16**,
A61K 47/34, 9/00, 9/14, 9/16, 9/20, 9/28, 9/70

(21) International Application Number:
PCT/IN2004/000097

(22) International Filing Date: 7 April 2004 (07.04.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
355/MUM/2003 10 April 2003 (10.04.2003) IN

(71) Applicants and

(72) Inventors: **MALSHE, Vinod, Chintamani** [IN/IN]; I, Staff Quarters, UDCT Campus, Matunga, Mumbai 400 019, Maharashtra (IN). **DEVARAJAN, Padma, Venkatchalam** [IN/IN]; 12, Staff Quarters, UDCT Campus, Matunga, Mumbai 400 019, Maharashtra (IN). **SHASTRI, Sayalee, Ranjan** [IN/IN]; 313/314, Amish Apartments, Opposite Kalwa Post Office, Kalwa, Thane 400 065, Maharashtra (IN).

(74) Agent: **NAIR, Gopakumar, G.**; Gopakumar Nair Associates, Nair Baug, Akurli Road, Kandivli (East), Mumbai 400 101 (IN).

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, 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, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*
- *of inventorship (Rule 4.17(iv)) for US only*

Published:

- *with international search report*

(88) Date of publication of the international search report:
24 March 2005

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.

(54) Title: NOVEL BIODEGRADABLE ALIPHATIC POLYESTERS AND PHARMACEUTICAL COMPOSITIONS AND APPLICATIONS THEREOF

(57) Abstract: Novel biodegradable aliphatic polyesters derived from fatty diacids and fatty diols with even number of carbon atoms, pharmaceutical compositions and applications thereof wherein the said pharmaceutical compositions comprises at least one pharmaceutically active ingredient and the said biodegradable aliphatic polyester and the said pharmaceutical compositions is in the form of different drug delivery systems such as drug loaded microparticles, molded implants, coated granules, injectable sustained release particles, stents, films, matrix tablet, coated tablets, dry syrup, mouth dissolving tablets, microparticles dispersed in gels, taste masked formulation, inserts (ophthalmic), fibers, ligatures and sutures.



WO 2004/108792 A3

INTERNATIONAL SEARCH REPORT

International Application No
IN2004/000097

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C08G63/16 A61K47/34 A61K9/00 A61K9/14 A61K9/16
A61K9/20 A61K9/28 A61K9/70

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 C08G 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, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages-	Relevant to claim No.
X	US 4 205 399 A (JAMIOLKOWSKI DENNIS D ET AL) 3 June 1980 (1980-06-03) column 2; examples 2-7 -----	1
X	WO 00/55236 A (FOA MARCO ; MILIZIA TIZIANA (IT); FARACHI FERNANDA (IT); MINI RICERCA) 21 September 2000 (2000-09-21) cited in the application page 3 - page 4; claims; examples -----	1, 3-6
X	US 4 032 993 A (SEDIVY PIERRE ET AL) 5 July 1977 (1977-07-05) column 3, line 14 - column 4, line 19; claims; examples -----	1, 3-6
X	US 3 883 901 A (SEDIVY PIERRE ET AL) 20 May 1975 (1975-05-20) column 2 - column 3; claims; examples ----- -/-	1, 3-6

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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.

8 document member of the same patent family

Date of the actual completion of the international search

25 November 2004

Date of mailing of the international search report

07/12/2004

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

Masson, P

INTERNATIONAL SEARCH REPORT

International Application No

1001/IN2004/000097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 186 189 A (JAMIOLOWSKI DENNIS D ET AL) 29 January 1980 (1980-01-29) column 2, line 24 - line 36 column 3, line 65 - column 4, line 10 claims; examples 2-7 -----	1-20
X	US 5 439 688 A (ORSOLINI PIERO ET AL) 8 August 1995 (1995-08-08) column 1, line 59 - column 2, line 3; claims; examples -----	1-20
X	FR 2 787 730 A (OREAL) 30 June 2000 (2000-06-30) page 2, line 35 - page 4, line 23; claims; examples -----	1-20
A	US 5 324 520 A (DUNN RICHARD L ET AL) 28 June 1994 (1994-06-28) the whole document -----	13
X	DE 38 35 099 A (DEBIOPHARM SA) 27 April 1989 (1989-04-27) column 2, line 17 - line 31 column 2, line 53 - line 57 column 4, line 7 - line 17; claims; examples 1,4,5,7 -----	1-20
X	US 2002/028249 A1 (LEWIS DANNY H ET AL) 7 March 2002 (2002-03-07) page 2, paragraph 16 -----	1-20
X	DATABASE WPI Section Ch, Week 199705 Derwent Publications Ltd., London, GB; Class A23, AN 1997-048394 XP002307560 & JP 08 301996 A (KANEBO LTD) 19 November 1996 (1996-11-19) abstract -----	1,3-6
X	DATABASE WPI Section Ch, Week 199617 Derwent Publications Ltd., London, GB; Class A23, AN 1996-167261 XP002307561 & JP 08 048757 A (ASAHI KASEI KOGYO KK) 20 February 1996 (1996-02-20) abstract -----	1,3-6
	----- -/--	

INTERNATIONAL SEARCH REPORT

International Application No

/IN2004/000097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DATABASE WPI Section Ch, Week 199316 Derwent Publications Ltd., London, GB; Class A23, AN 1993-131364 XP002307562 & JP 05 070574 A (SHOWA HIGH POLYMER CO LTD) 23 March 1993 (1993-03-23) abstract -----	1,3-6
X	WO 94/21228 A (MINNESOTA MINING & MFG) 29 September 1994 (1994-09-29) page 3, line 1 - line 22 page 4, line 7 - line 31 page 18, line 16 - line 35 page 20, line 9 - page 21, line 14; claims -----	1-20
X	US 4 487 919 A (MCCONNELL RICHARD L ET AL) 11 December 1984 (1984-12-11) column 1, line 31 - line 61 examples -----	1,3-6
X	ATKINS T W: "Fabrication of microcapsules using poly(ethylene adipate) and a blend of poly(ethylene adipate) with poly(hydroxybutyrate-hydroxyvalerate): incorporation and release of bovine serum albumin" BIOMATERIALS, ELSEVIER SCIENCE PUBLISHERS BV., BARKING, GB, vol. 18, no. 2, 1997, pages 173-180, XP004014624 ISSN: 0142-9612 page 174, left-hand column; figure 1c -----	1-20
X	WO 03/011250 A (ZOUKAS KIRURGKONSULT AB ; HARNEK JAN (SE); ZOUKA EFTICHIA-VASSILIKI (S) 13 February 2003 (2003-02-13) page 3, line 23 - page 4, line 6 page 6, line 30 - page 7, line 25 -----	1-20
X	US 2002/022038 A1 (LHEUREUX ERIC ET AL) 21 February 2002 (2002-02-21) page 2, paragraph 21 - paragraph 23; claims -----	1-20
X	EP 0 749 997 A (KUREHA CHEMICAL IND CO LTD) 27 December 1996 (1996-12-27) the whole document -----	1,3-6
A	US 2002/098237 A1 (BRADY DANIEL G ET AL) 25 July 2002 (2002-07-25) page 10, paragraphs 123,124 page 6, paragraph 61-64 -----	1-20
	-/--	

INTERNATIONAL SEARCH REPORT

International Application No
IN2004/000097

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5 945 115 A (DUNN RICHARD L ET AL) 31 August 1999 (1999-08-31) column 3, line 53 - column 4, line 31 -----	1-20
A	WO 03/024455 A (ASHTON PAUL ; CHEN JIANBING (US); CONTROL DELIVERY SYSTEMS INC (US)) 27 March 2003 (2003-03-27) the whole document -----	1-20

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/IN2004/000097

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4205399	A	03-06-1980	US 4140678 A CA 1112795 A1 DE 2825911 A1 FR 2394624 A1 GB 1601503 A GB 1601504 A	20-02-1979 17-11-1981 21-12-1978 12-01-1979 28-10-1981 28-10-1981
WO 0055236	A	21-09-2000	IT T0990198 A1 AU 756070 B2 AU 3289900 A CA 2365485 A1 WO 0055236 A1 EP 1165650 A1 JP 2002539309 T NO 20014456 A US 6562939 B1	15-09-2000 02-01-2003 04-10-2000 21-09-2000 21-09-2000 02-01-2002 19-11-2002 14-09-2001 13-05-2003
US 4032993	A	05-07-1977	FR 2278348 A2 AU 500004 B2 BE 830746 A1 BR 7504001 A CH 597867 A5 DE 2528851 A1 DK 293475 A GB 1474301 A IT 1039539 B JP 51049591 A NL 7507407 A NO 752336 A SE 7507421 A ZA 7504080 A	13-02-1976 10-05-1979 29-12-1975 29-06-1976 14-04-1978 08-01-1976 29-12-1975 25-05-1977 10-12-1979 28-04-1976 30-12-1975 30-12-1975 29-12-1975 26-05-1976
US 3883901	A	20-05-1975	FR 2208687 A1 AU 6295773 A BE 808088 A1 CA 1023493 A1 CH 587659 A5 DE 2359865 A1 DK 131804 B GB 1444817 A IT 1048160 B JP 50047492 A NL 7316072 A NO 135968 B SE 396286 B ZA 7309015 A	28-06-1974 29-05-1975 30-05-1974 27-12-1977 13-05-1977 06-06-1974 08-09-1975 04-08-1976 20-11-1980 26-04-1975 05-06-1974 28-03-1977 19-09-1977 30-10-1974
US 4186189	A	29-01-1980	AU 518227 B2 AU 3683478 A CA 1100042 A1 DE 2842089 A1 FR 2404436 A1 GB 1592829 A JP 54052721 A ZA 7805491 A	17-09-1981 06-12-1979 28-04-1981 05-04-1979 27-04-1979 08-07-1981 25-04-1979 28-05-1980
US 5439688	A	08-08-1995	CH 679207 A5 CH 681425 A5	15-01-1992 31-03-1993

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IN2004/000097

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5439688	A		AT 397197 B AT 154590 A AU 619996 B2 AU 5910390 A BE 1003093 A3 CA 2021767 A1 DE 4023134 A1 DK 180790 A ES 2020890 A6 FI 97688 B FR 2650182 A1 GB 2234169 A ,B GR 90100568 A ,B IE 902592 A1 IL 95120 A IT 1243357 B JP 1933192 C JP 3066625 A JP 6062427 B LU 87772 A1 NL 9001646 A ,B, NO 903264 A PT 94842 A ,B SE 504279 C2 SE 9002522 A US 5134122 A US 5225205 A ZA 9005654 A AT 223591 A ,B BE 1004923 A5 CA 2055115 A1 DE 4136930 A1 ES 2049617 A1 FR 2668707 A1 GB 2249725 A ,B IT 1252870 B JP 4288021 A NL 9101877 A SE 506448 C2 SE 9103348 A	25-02-1994 15-07-1993 06-02-1992 31-01-1991 19-11-1991 29-01-1991 31-01-1991 29-01-1991 01-10-1991 31-10-1996 01-02-1991 30-01-1991 10-12-1991 27-02-1991 07-10-1994 10-06-1994 26-05-1995 22-03-1991 17-08-1994 11-12-1990 18-02-1991 29-01-1991 20-03-1991 23-12-1996 29-01-1991 28-07-1992 06-07-1993 29-05-1991 15-07-1993 23-02-1993 15-05-1992 20-08-1992 16-04-1994 07-05-1992 20-05-1992 28-06-1995 13-10-1992 01-06-1992 15-12-1997 15-05-1992
FR 2787730	A	30-06-2000	FR 2787730 A1 BR 9906285 A CA 2293729 A1 CN 1258499 A EP 1029587 A1 JP 2000191506 A KR 2000048452 A US 6565886 B1	30-06-2000 06-03-2001 29-06-2000 05-07-2000 23-08-2000 11-07-2000 25-07-2000 20-05-2003
US 5324520	A	28-06-1994	AU 2561492 A WO 9303669 A1	16-03-1993 04-03-1993
DE 3835099	A	27-04-1989	CH 672887 A5 BE 1001687 A5 CA 1332808 C DE 3835099 A1 DK 571488 A	15-01-1990 06-02-1990 01-11-1994 27-04-1989 15-04-1989

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
IN2004/000097

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 3835099	A		ES 2009347 A6 FR 2622105 A1 GB 2211091 A ,B GR 1000266 B IE 60475 B1 IT 1227394 B JP 1157920 A JP 2716747 B2 NL 8802490 A PT 88757 B US 5187150 A	16-09-1989 28-04-1989 28-06-1989 12-05-1992 13-07-1994 08-04-1991 21-06-1989 18-02-1998 01-05-1989 29-01-1993 16-02-1993
US 2002028249	A1	07-03-2002	US 6290983 B1 US 6110503 A US 5916598 A US 5792477 A US 2002146457 A1 US 2003129249 A1 US 2004197417 A1 AU 733199 B2 AU 2897297 A BG 64036 B1 BG 102854 A BR 9709217 A CA 2251987 A1 CN 1226821 A CZ 9803591 A3 EE 9800383 A WO 9741837 A2 EP 1210942 A2 EP 0904063 A2 HU 9902797 A2 ID 17505 A JP 2000503663 T KR 2000010697 A NO 984808 A NZ 333196 A PL 329720 A1 RU 2201214 C2 SK 154198 A3 ZA 9703891 A	18-09-2001 29-08-2000 29-06-1999 11-08-1998 10-10-2002 10-07-2003 07-10-2004 10-05-2001 26-11-1997 28-11-2003 31-05-1999 10-08-1999 13-11-1997 25-08-1999 17-03-1999 15-04-1999 13-11-1997 05-06-2002 31-03-1999 28-12-1999 08-01-1998 28-03-2000 25-02-2000 06-01-1999 28-02-2000 12-04-1999 27-03-2003 07-05-1999 07-11-1997
JP 8301996	A	19-11-1996	NONE	
JP 8048757	A	20-02-1996	NONE	
JP 5070574	A	23-03-1993	JP 3046660 B2	29-05-2000
WO 9421228	A	29-09-1994	AU 679510 B2 AU 6409394 A CA 2156075 A1 DE 69405719 D1 DE 69405719 T2 EP 0689423 A1 ES 2107203 T3 JP 8507792 T NZ 263410 A WO 9421228 A1	03-07-1997 11-10-1994 29-09-1994 23-10-1997 15-01-1998 03-01-1996 16-11-1997 20-08-1996 26-05-1997 29-09-1994

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/IN2004/000097

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9421228	A		US 6042811 A	28-03-2000
US 4487919	A	11-12-1984	NONE	
WO 03011250	A	13-02-2003	SE 523216 C2 EP 1418887 A1 SE 0102621 A WO 03011250 A1	06-04-2004 19-05-2004 28-01-2003 13-02-2003
US 2002022038	A1	21-02-2002	CA 2346320 A1 CN 1323579 A EP 1151741 A1 JP 2001354551 A	05-11-2001 28-11-2001 07-11-2001 25-12-2001
EP 0749997	A	27-12-1996	CA 2179219 A1 EP 0749997 A2 JP 3518954 B2 JP 9316181 A US 5688586 A	21-12-1996 27-12-1996 12-04-2004 09-12-1997 18-11-1997
US 2002098237	A1	25-07-2002	US 2002028244 A1 US 6306423 B1 US 2004033241 A1 US 2004170665 A1 AU 6504301 A AU 7292701 A BR 0111300 A CA 2411277 A1 CN 1446081 T EP 1289504 A2 JP 2003535117 T NZ 522611 A WO 0193827 A2 WO 0193890 A2 US 6312708 B1 US 2002028216 A1	07-03-2002 23-10-2001 19-02-2004 02-09-2004 17-12-2001 17-12-2001 10-06-2003 13-12-2001 01-10-2003 12-03-2003 25-11-2003 30-07-2004 13-12-2001 13-12-2001 06-11-2001 07-03-2002
US 5945115	A	31-08-1999	US 5702716 A AT 162398 T AU 2605592 A CA 2079830 A1 DE 69224131 D1 DE 69224131 T2 EP 0537559 A1 ES 2113906 T3 JP 5286850 A KR 260672 B1	30-12-1997 15-02-1998 22-04-1993 16-04-1993 26-02-1998 30-04-1998 21-04-1993 16-05-1998 02-11-1993 01-08-2000
WO 03024455	A	27-03-2003	BR 0209198 A CA 2444894 A1 CA 2460920 A1 EP 1383504 A1 EP 1429774 A2 WO 02087586 A1 WO 03024455 A2 US 2003039689 A1 US 2003108588 A1 US 2003158598 A1	08-06-2004 07-11-2002 27-03-2003 28-01-2004 23-06-2004 07-11-2002 27-03-2003 27-02-2003 12-06-2003 21-08-2003

INTERNATIONAL SEARCH REPORT

Information on patent family members

National Application No

/IN2004/000097

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 03024455	A	US 2003229390 A1	11-12-2003
		US 2004022853 A1	05-02-2004