(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
8 June 2006 (08.06.2006)

PCT

(10) International Publication Number
WO 2006/060730 A3

(51) International Patent Classification:
C07D 239/557 (2006.01) *A61K 31/513* (2006.01)
C07D 413/12 (2006.01) *A61P 31/18* (2006.01)

(21) International Application Number:
PCT/US2005/043781

(22) International Filing Date:
2 December 2005 (02.12.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/633,132 3 December 2004 (03.12.2004) US

(71) Applicants *(for all designated States except US)*: **MERCK & CO., INC.** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **ISTITUTO DI RICERCHE DI BIOLOGIA MOLECOLARE P. ANGELETTI S.P.A.** [IT/IT]; Via Pontina Km. 30,600, I-00040 Pomezia (IT). **MERCK SHARP & DOHME LIMITED** [GB/GB]; Hertford Road, Hoddesdon, Hertfordshire EN11 9BU (GB).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BELYK, Kevin, M.** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **MORRISON, Henry, G.** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **JONES, Philip** [GB/IT]; Via Pontina Km, 30,600, I-00040 Pomezia (IT). **SUMMA, Vincenzo** [IT/IT]; Via Pontina Km, 30,600, I-00040 Pomezia (IT). **COOPER, V., Brett** [GB/GB]; Hertford Road, Hoddesdon Hertfordshire EN11 9BU (GB). **MAHAJAN, Amar, J.** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **KUMKE, Daniel, J.** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **TUNG, Hsien-Hsin** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **WAI, Lawrence** [CA/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **PRUZINSKY, Vanessa** [US/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **PYE, Philip** [GB/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **ANGELAUD, Remy** [FR/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US). **MANCHENO, Danny** [EC/US]; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US).

(74) Common Representative: **MERCK & CO., INC.**; 126 East Lincoln Avenue, Rahway, New Jersey 07065-0907 (US).

(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, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

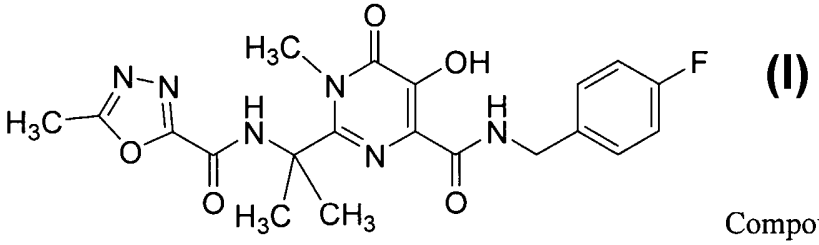
(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, 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).

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:
17 August 2006

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: POTASSIUM SALT OF AN HIV INTEGRASE INHIBITOR



(I)

Compound A

(57) Abstract: Potassium salts of Coompound A and methods for their preparation are disclosed, wherein Compound A is of formula: (Compound A). Compound A is an HIV integrase inhibitor useful for treating or prophylaxis of HIV infection, for delaying the onset of AIDS, and for treating or prophylaxis of AIDS.

WO 2006/060730 A3

INTERNATIONAL SEARCH REPORT

national application No
PCT/US2005/043781

A. CLASSIFICATION OF SUBJECT MATTER
INV. C07D239/557 C07D413/12 A61K31/513 A61P31/18

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)
C07D 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, CHEM ABS Data, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 03/035077 A (ISTITUTO DI RICERCHE DI BIOLOGIA MOLECOLARE P. ANGELETTI SPA; CRESCENZ) 1 May 2003 (2003-05-01) cited in the application page 2, line 10 - line 17 page 11, line 25 - line 27 page 49, line 20 - line 21 page 55, line 10 page 161; compound 24 claims 1-33	1-44
A	the whole document	45

☐ 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	Date of mailing of the international search report
27 June 2006	04/07/2006

Name and mailing address of the ISA/	Authorized officer
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	Megido, B

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2005/043781

Box 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. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 17-20 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 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. [X] 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.

[X] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

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

1. claims: 1-44

potassium salt of the compound N-(4-fluorobenzyl)-5-hydroxy-1-methyl-2-(1-methyl-1-{[(5-methyl-1,3,4-oxadiazol-2-yl)carbonil]amino}ethyl)-6-oxo-1,6-dihydropyrimidine-4-carboxamide (hereinafter designated as "Compound A"), pharmacological compositions thereof, method of treatment based in such salt and processes for its preparation

---

2. claims: 45-54

process for the preparation of a compound according to general formula Q, which can be used as synthetical intermediate in the synthesis of the compound N-(4-fluorobenzyl)-5-hydroxy-1-methyl-2-(1-methyl-1-{[(5-methyl-1,3,4-oxadiazol-2-yl)carbonil]amino}ethyl)-6-oxo-1,6-dihydropyrimidine-4-carboxamide (hereinafter designated as "Compound A")

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2005/043781

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 03035077 A	01-05-2003	AT	318140 T	15-03-2006
		BR	0213522 A	08-09-2004
		CA	2463976 A1	01-05-2003
		EP	1441735 A1	04-08-2004
		HR	20040373 A2	31-08-2005
		HU	0401740 A2	28-12-2004
		JP	2005511543 T	28-04-2005
		MX	PA04003932 A	18-06-2004
		NZ	533057 A	25-11-2005