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Declarations under Rule 4.17:
    — of inventorship (Rule 4.17(iv))

Published:
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(88) Date of publication of the international search report:
    15 September 2011

(54) Title: IMPROVED PROCESS FOR THE PREPARATION OF AMIDE INTERMEDIATES AND THEIR USE THEREOF

(57) Abstract: The present invention relates to an improved process for the preparation of amide intermediates useful in the preparation of cholesterol reducing agents.
# INTERNATIONAL SEARCH REPORT

## A. CLASSIFICATION OF SUBJECT MATTER

According to International Patent Classification (IPC) or to both national classification and IPC

| IPC: | C07D 405/-, C07D239/-, C07D 319/- |

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

- IPC: C07D 405/-, C07D239/-, C07D 319/-

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)

- WPI, EPDOC, CNKI, CNPAT, REG, CAPLUS, CAS, REACT, rosvastatin+, prepar+ or synth+, bem, bfa, the structure of formula-1

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
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<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<td>PX</td>
<td>WO2010023678A1 (BIOCON LIMITED) 4 Mar. 2010 (04. 03. 2010), The whole document, especially page 5 of the description, scheme 1, example 8</td>
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<td>WO2008044243A2 (SATYANARAYANA REDDY M) 17 Apr. 2008 (17. 04. 2008), The whole document, especially pages 22 and 24 of the description, schemes 1, 6, 7 and 13, examples 1, 2 and 5.</td>
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<td>WO2007125547A2 (SATYANARAYANA REDDY M) 8 Nov. 2007 (08. 11. 2007), The whole document, especially pages 17-18 and 38, schemes 5, 12 and 14, examples 16-17</td>
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- 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 application or patent 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 17 May 2011 (17.05.2011)

Date of mailing of the international search report 14 Jul. 2011 (14.07.2011)

Name and mailing address of the ISA/CN

The State Intellectual Property Office, the P.R.China
6 Xiucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088
Faesimile No. 86-10-62019451

Authorized officer LEI, Qin
Telephone No. (86-10)62086358

Form PCT/ISA/210 (second sheet) (July 2009)
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:

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).

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

See extra sheet

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 fees, this Authority did not invite payment of 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. 1-13

Remark on protest

- The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees.
INTERNATIONAL SEARCH REPORT

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This application claims the process for the preparation of the known compounds of formula-1a or formula-1, their crystalline forms and the process for the preparation thereof; the process for the preparation of the intermediates in each step in the procedure of the preparation of said known compounds of formula-1a or formula-1, the process for the preparation of the compounds of formula-1b by using the compounds of formula-5 which is obtained from the said known compounds of formula-1a, crystalline form of compounds of formula-5, process for the preparation and use thereof; and the usage of alkali metal alkoxide bases and use of the aforementioned crystalline forms.

Because the compounds of formula-1a or formula-1, and all of the intermediates in each step in the procedure of the preparation of said known compounds of formula-1a or formula-1 are all known compounds, this application involves several groups of inventions, and there is no technical relationship among them and there is no one or more the same or corresponding special technical features in these inventions. Therefore, the present application does not meet the requirements of unity of invention in accordance with PCT Rule 13.1.

The present application has at least 13 inventions or groups of inventions:
1) Claims 1-13: process for the preparation of the compounds of formula-1;
2) Claims 14, 16 and claim 25 (part referring to the use of the crystalline form-I of the compounds of formula-1a): crystalline form-I of the compounds of formula-1a, process for the preparation and use thereof;
3) Claims 15, 17 and claim 25 (part referring to the use of crystalline form-II of the compounds of formula-1a): crystalline form-II of the compounds of formula-1a, process for the preparation and use thereof;
4) Claims 18-19 and claim 25 (part referring to the use of crystalline form-III of the compounds of formula-1a): crystalline form-III of the compounds of formula-1a, process for the preparation and use thereof;
5) Claims 20-21 and claim 25 (part referring to the use of the crystalline form of the compounds of formula-5): crystalline form of the compounds of formula-5, process for the preparation and use thereof;
6) Claims 22-23: process for the preparation of the compounds of formula-4;
7) Claim 24: usage of alkali metal alkoxide bases to improve the E isomer content in the condensation reaction between the compounds of formula-2 and formula 3;
8) Claims 26-28, 30-32, 35-42: process for the preparation of the compounds of formula-3a;
9) Claim 29: process for the preparation of the compounds of formula-9;
10) Claim 33: another process for the preparation of the compounds of formula-9;
11) Claim 34: process for the preparation of the compounds of formula-8;
12) Claim 43: process for the preparation of the compounds of formula-10;
13) Claim 44: process for the preparation of the compounds of formula-16.

A. CLASSIFICATION OF SUBJECT MATTER
C07D405/06 (2006.01)i
C07D239/12 (2006.01)i
C07D319/06 (2006.01)i

Form PCT/ISA /210 (extra sheet) (July 2009)
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