Overview

- Sources of patent information (primary, secondary)
- Publication practices
- Components/categories of patent information

- Information related to individual application
- Information derived from collections

- Availability in different countries
Role of patents

Historically two competing interests of two stakeholders:

- **Protection** of innovative idea
  - Reward for investment

- **Disclosure** of technical teaching for further use by others

Inventor

Public
Role of patent information

Publication of patent information serves two purposes:

- Informing of existing protection rights
  - what? where? when?

- Disclosure and dissemination of technical teaching
Life cycle of an individual application

- All starts with an invention
- Application for patent at OFF (Office of First Filing)
- Subsequent applications at OSFs (Office of Second Filing)

- claiming priority (Paris convention)  [Legal family]
  - OSF recognizes application date of OFF (priority date)
- not claiming priority  [Technical family]
  - often not the case in DCs
Stages of patent prosecution

- Filing
- Formal Examination
- Substantive Examination
- Granting
- Fee administration
- Opposition
- Revocation
- Expiration

During all these stages patent information is constantly added by
- OFF
- OFS
- third parties
What is **published** over life cycle?

- Varies strongly from country to country
- Minimum: notification of grants or other events in Gazettes
  - if so: further information only retrievable through file inspection
- Often but not always:
  - full specification of granted patents
  - applications
    - usually 18 month after filing
  - many countries (DCs) don’t (PCT NPE)
  - search reports, corrections, amendments, translations
  - legal status
What is published over life cycle?

Conclusion:

- In (many)(some) countries the public life of an application only starts after granting.

- In (many)(some) countries only file inspection discloses technical teaching and scope of protection.
Primary patent information sources

► Each jurisdiction defines the publication of authoritative patent information and the respective authority.

► Traditionally, three publication products can be distinguished:

- National (Patent) Gazette
- Publications of full patent applications, granted patents
- National Patent Registers
Gazettes

- publication of notifications, e.g. fee change
- publication of essential legal events, such as grants
- only (some) bibliographic data (front page)
- limited technical disclosure (sometimes abstract)
- limited legal information (usually no claims)
- regularly published gazette editions
- published editions are not updated
- changes/corrections appear in new edition
- often dedicated IP right gazettes
- sometimes general government gazette
Publication of full specifications

- complement the limited information in Gazettes
- serve for full technical disclosure
- claims define
  - potential protection (publication of applications)
  - granted protection (publication of granted patents)
Components of a patent document:

- Bibliographic data (frontpage): title, applicant(s), inventor(s), filing date, priorities,..
- Description part: problem to be solved, prior art, inventive idea, embodiments
- Drawings
- Claims
- (State of art search report)
such as simvastatin and lovastatin, antihyperlipidemic efficacy in HIV-infected patients on protease inhibitor therapy may be compromised at standard statin doses.

SUMMARY OF THE INVENTION

In one aspect, there is provided by the present invention a method for reducing elevated plasma LDL-cholesterol and/or triglyceride levels in an HIV-infected patient undergoing therapy with one or more HIV protease inhibitors resulting in such elevated LDL-cholesterol and/or triglyceride levels, comprising substituting in such therapy an HIV-inhibiting and LDL-cholesterol and/or triglyceride reducing amount of atazanavir for the offending HIV protease inhibitor. The reduction in hyperlipidemia is similar to that achieved by use of a statin, but without the side effects seen with this class of lipid-lowering agents. In another aspect, there is provided a method for reducing elevated plasma LDL-cholesterol and/or triglyceride levels in an HIV-infected patient undergoing HIV protease inhibitor therapy which comprises administering to said patient an effective HIV-inhibiting amount of atazanavir in combination with an HIV-inhibiting amount of at least one other HIV protease inhibitor which is metabolized by cytochrome P450 monoxygenase. In yet another aspect, there is provided a method for treating HIV infection in a patient exhibiting elevated plasma LDL-cholesterol and/or triglyceride levels comprising administering to said patient an HIV-inhibiting amount of atazanavir.

DETAILED DESCRIPTION OF THE INVENTION

The present invention is based on the unexpected observation that atazanavir, unlike other HIV protease inhibitors, has no significant effect on plasma LDL-cholesterol and triglyceride levels when administered in normal HIV-inhibiting dosages.

In clinical studies carried out on 98 HIV-positive patients who have taken atazanavir for one year, no increases in plasma LDL-cholesterol or triglycerides were observed. Thus, atazanavir is particularly useful in the treatment of HIV-positive patients who have elevated plasma LDL-cholesterol and/or triglyceride levels. It can be used as monotherapy or as part of a "cocktail" which would include other antiretroviral drugs such as reverse transcriptase inhibitors, non-nucleoside reverse transcriptase inhibitors, and other HIV protease inhibitors. In one aspect, then, the present invention provides a method for treating HIV infection in a patient exhibiting elevated plasma LDL-cholesterol and/or triglyceride levels comprising administering to said patient an HIV-inhibiting amount of atazanavir.

Atazanavir is especially useful in the treatment of HIV-infected patients who have elevated plasma LDL-cholesterol and/or triglyceride levels resulting from antiretroviral therapy with an HIV protease inhibitor.

In a Phase II randomized study, the safety and anti-HIV activity of three once daily doses of atazanavir (200 mg, 400 mg and 500 mg) was compared with 750 mg of the protease inhibitor, nelfinavir dosed three times daily. Twenty-one patients received nelfinavir in combination with stavudine and didanosine, while atazanavir was administered both as monotherapy (for two weeks) and then in combination with stavudine and didanosine to 78 treatment-naive (no prior anti-HIV therapy) patients with HIV viral loads >2000 copies per milliliter (c/mL). Patients in the atazanavir arm showed least comparable reductions in viral load compared to the nelfinavir-treated patients, but displayed no changes in
Claims

1. (WO2003020206) USE OF ATAZANAVIR IN HIV THERAPY

Note: Text based on automatic Optical Character Recognition processes. Please use the PDF version for legal matters.

CLAIMS

What is claimed is:

1. A method for reducing elevated plasma LDL and/or triglyceride levels in an HIV-infected patient resulting from therapy with one or more HIV protease inhibitors, comprising substituting an HIV-inhibiting and LDL and/or triglyceride reducing amount of atazanavir for the offending HIV protease inhibitor used in such therapy.

2. A method for reducing elevated plasma LDL and/or triglyceride levels in an HIV-infected patient undergoing HIV protease therapy which comprises administering to said patient an effective HIV-inhibiting amount of atazanavir in combination with an HIV-inhibiting amount of at least one HIV protease inhibitor metabolized by cytochrome P450 monooxygenase.

3. The method of Claim 2 wherein atazanavir is administered in combination with an HIV protease inhibitor selected from saquinavir, indinavir, amprenavir, nelfinavir, tipranavir or lopinavir.

4. The method of Claim 3 wherein atazanavir is administered in combination with saquinavir.

5. A method for treating HIV infection in a patient exhibiting elevated plasma LDL-cholesterol and/or triglyceride levels comprising administering to said patient an HIV-inhibiting amount of atazanavir.
Patent registers

- up-to-date legal status information
- varying detailedness data content
- regularly updated (often daily)
- > tomorrow
Means of publication

- Traditionally in paper (several countries still do)

- Electronically:
  - on media like CDs, DVDs
  - on dedicated websites:
    - display
    - download (single, bulk, web services)
  - as PDF, HTML, ..
Secondary sources of patent Information

Collect data from primary sources and publish:

- Commercial patent databases
- Free-of-charge patent databases:
  - hosted by some IPOs
  - hosted by others: Google Patents, Patentlens,..
Common features and differences

- Country coverage
- Patent information retrievable
- Patent information searchable (search fields)
- Complexity of query language and search queries:
  - operators
  - truncations
  - nesting, ranges
  - weighing, fuzzyness
- Various formats e.g. for priority data,...
Major free patent databases

- Patentscope: WIPO
  http://www.wipo.int/patentscope/search/en/search.jsf

- Espacenet: European Patent Office (EPO)
  http://ep.espacenet.com/

- Depatisnet: German Patent Office (DPMA)
  http://depatisnet.dpma.de
Common features and differences

- Search modes:
  - "quick" (Espacenet), "simple" (Patentscope)
  - "advanced" (Espacenet), "beginner" (Depatisnet), "field combinations" (Patentscope)
  - "expert" (Depatisnet), "advanced" (Patentscope)
Espacenet

- Broad country coverage (90+ countries)
- INPADOC family information
- INPADOC legal status (45+ countries)
- ECLA classifications searchable
- Limited number of search fields:
  - e.g. no full text search of keywords (only in title, abstract)
- Limited query complexity
- Machine translation of retrieved full text
- Download of result list
Advanced Search

1. Database

Select patent database:
Worldwide - full collection of published patent applications from 80+ countries

2. Search terms

Enter keywords in English - ctrl-enter expands the field you are in

Keyword(s) in title: plastic and bicycle
Keyword(s) in title or abstract: hair
Publication number: WO2008014520
Application number: DE19971031696
Priority number: WO1995US15925
Publication date: yyyyymmdd
Applicant(s): Institut Pasteur
Inventor(s): Smith
European Classification (ECLA): F03G7/10

Search of keywords only in title and abstract
Patentscope

- Country coverage: PCT + national collections (DCs)
- Very broad range of search fields
  - e.g. PCT full text search
- Very complex search queries
- Cross language search (CLIR)
- Google translation interface
- Visualization of statistical analysis of search results
- Filtering and relevance ranking of result list
Depatisnet

- Broad country coverage (90+ countries)
- INPADOC family information
- ECLA classifications searchable
- Reclassification by DE examiners searchable ("ICP" field)
- Very broad range of search fields
  - e.g. some full text search
- Complex search queries
- Enhanced premium interface (batch download, saving of queries; requires registration)
- no machine translation, no cross language search
Expert search

For more information please see the help pages of the Expert search.

Formulate search

Search query:

Available fields and wildcards

- Publication data
  - Publication number (PN)
  - Country of publication (IPC)
  - Publication date (PU)
  - Publication year (PY)
  - Applicant/Owner (PA)
  - Inventor (IN)
  - Filing code (FO)

- Text fields
  - Title (TI)
  - Abstract (AB)
  - Description (DE)
  - Full text data (FI)

- Application data
  - Application number (A)
  - Date of application (AA)
  - Application date (AD)
  - Application year (AY)

- Priority data
  - Priority number (PR)
  - Country of priority (PPI)
  - Priority date (PD)
  - Priority year (PY)

- Wildcards:
  - ? No character or any number of characters
  - ! One character only
  - # One or no character
Searching primary sources?

Free primary sources may offer additional advantages despite limited country coverage, eg

- USPTO: PatFT, AppFT
  - US classification searchable
  - US full text searchable

- JPO: IPDL
  - JP FI and F-term classification searchable
Commercial providers

- Commercial database providers: Thomson, Questel, LexisNexis, Minesoft
- fee based
- broad coverage of searchable and retrievable data (e.g. full texts)
- valued added services, e.g.:
  - analysis and visualization tools
  - data enhancement, quality checks
  - added proprietary information, e.g. enhanced abstracts
Collaborations between inventors
Abstract

DWPI Abstract
(WO2009056818A1)

Novelty
Pharmaceutical composition comprises a solid unit dosage form comprising ritonavir and atazanavir or their salts.

Detailed Description
An INDEPENDENT CLAIM is included for a method of making the pharmaceutical composition comprising: hot melt extruding the ritonavir to form an extrudate, then formulating the extrudate into the first layer; formulating the atazanavir into the second tablet layer; and combining the first and second layers to provide a single unitary multiple layer tablet formulation.

Activity
Anti-HIV.

Mechanism
Protease inhibitor; Cytochrome P450 inhibitor.

Use
The composition is useful for treating HIV or AIDS. No biological data given.

Advantage
The composition increases the treatment potency particularly against drug-resistant HIV-1 strains, without significantly raising the risk for toxicity in treatment-naive and treatment-experienced patients. The composition has greater stability, less risk of chemical interaction between different medicaments, smaller bulk and accurate dosage, and is easy to prepare.

Technology Focus
PHARMACEUTICALS - Preferred Composition: The composition is a tablet formulation comprising the ritonavir in the first layer of the formulation and the atazanavir in the second layer of the formulation; a water insoluble polymer and/or a water soluble polymer; and at least one excipient, where the excipient includes a plasticizer. Preferred Components: The polymer is present at least in the layer containing the ritonavir. The amount of atazanavir and ritonavir is 70-400 mg and 20-200 mg, respectively. The weight ratio of the ritonavir or atazanavir to the weight of the polymer is 1:1-1:6. Preferred Method: The layer containing the ritonavir is obtainable by hot melt extruding the ritonavir with the polymer. The ritonavir is mixed with the water soluble polymer and/or the water insoluble polymer prior to the hot melt extrusion step. The atazanavir is mixed with the water soluble polymer and/or water insoluble polymer and extruded by hot melt granulation process. The method comprises preparing a substantially homogeneous melt of the ritonavir or atazanavir and optionally one or more excipients, extruding the melt, and cooling the melt until it solidifies. The melt is formed at 50-200°C. In the method, the ritonavir, the polymer, and optionally one or more excipients are processed to form a powder blend which is transferred through the heated barrel of the extruder, where the powder blend melts and a molten solution product is formed, which is allowed to cool to form an extrudate. The method comprises processing the cooled extrudate into a desired pharmaceutical dosage form. The layer containing the atazanavir is prepared by direct compression or by wet granulation.

Abstract

The invention relates to pharmaceutical compositions containing a combination of atazanavir and ritonavir, to methods of making them, and their use in medicine.
Patent Databases

- WIPO patent information brochures
  

- WIPO Guide to Technology Databases:
  
Example: PI services of EPO

- Espacenet: free
- GPI - Global Patent Index: fee
- OPS - Open Patent Service: free
- EP publication server: free
- Register Plus: free
- Bulletin: free

secondary
secondary
primary
primary
European patent documents

The European publication server is the official place to obtain copies of European patent documents. Other pages listed in this section deal with some special cases of European patent publications.

European publication server

The official place for obtaining copies of European patent applications, granted European patent specifications and corrected documents. New publications are loaded every week on publication day, Wednesday at 14.00 hrs CET.

European Patent Bulletin

The European Patent Bulletin contains bibliographic data as well as data concerning the legal situation of European patent applications and patents as laid down in Rule 146 EPC.

Publication dates

European patent applications and patent specifications are published every Wednesday. Note: Before 2007, if Wednesday of a week was a public holiday, publication day was moved to the first subsequent day that was not a holiday.

Basic definitions

Basic definitions used in reference to European patent documents.
Components of Patent Information

For each individual patent application:

- bibliographic data
- technical disclosure
- legal information
  - claims
  - legal status
- other
Bibliographic data

- traditionally the data on the front page of a patent document
- different components identified by INID codes
- serves to **identify** a patent publication, to **retrieve** it and **relate** it to other "similar" applications
  - same applicant
  - same inventor
  - same patent family
  - same technical field (classification)
- can partially change (assignee, classification,..)
USE OF ATAZANAVIR IN HIV THERAPY

A method for reducing elevated plasma LDL and triglyceride levels in an HIV-infected patient is disclosed. In this method, atazanavir (EMS-232632) can be used to treat HIV infection in patients exhibiting elevated plasma LDL-cholesterol and triglyceride levels, can be substituted for an offending HIV protease inhibitor used in such therapy, or can be used in combination with an HIV protease inhibitor metabolized by cytochrome P450 monooxygenase.

INVENTION CONCERNS A PROCESS OF REDUCTION OF PLASMA TISSUES ELEVATED LDL, CHOLESTEROL, TRIGLYCERIDES CHEMISTRY PATIENT INFECTION HIV. IN THE PROCESS, IT IS POSSIBLE TO USE ATAZANAVIR (EMS-232632) TO TREAT INFECTION HIV CHEMISTRY PATIENTS WITH ELEVATED PLASMA TISSUE ELEVATED LDL, CHOLESTEROL, TRIGLYCERIDES, DE THE SUBSTITUTE OR INHIBITOR OF THE PROTEASE OF VSH. OF THE PROCESS, IT IS POSSIBLE TO USE ATAZANAVIR (EMS-232632) TO TREAT INFECTION HIV CHEMISTRY PATIENTS WITH ELEVATED PLASMA TISSUE ELEVATED LDL, CHOLESTEROL, TRIGLYCERIDES, DE THE SUBSTITUTE OR INHIBITOR OF THE PROTEASE OF VSH. OF THE PROCESS, IT IS POSSIBLE TO USE ATAZANAVIR (EMS-232632) TO TREAT INFECTION HIV CHEMISTRY PATIENTS WITH ELEVATED PLASMA TISSUE ELEVATED LDL, CHOLESTEROL, TRIGLYCERIDES, DE THE SUBSTITUTE OR INHIBITOR OF THE PROTEASE OF VSH.
1/94 – Abstract / Bibliography

- Classification
- Publication number
- Filing date
- Priority data
- Applicant(s)

Inid codes

Title: NITROGEN-EFFICIENT MONOCOT PLANTS
Technical disclosure

- Description
- Drawings
- (Claims)
- (Abstract)
- technical teaching cannot be changed after filing
- except for
  - corrections of obvious errors
  - inclusion of prior art in description
  - more precise description of the problem solved
- reason for rejection, opposition, revocation
Claims

- describe protected subject matter
- in independent (main) claim only essential features of invention
- dependent claims describe additional advantageous features
- usually **change** during examination, ie after comparison with prior art:
  - narrower scope of protection
  - more precise wording
- only features from description may be included in amended claims
Legal status data

- All data related to legal *events or actions* as defined by the respective patent law and regulations of a particular *jurisdiction*

  - events > data change over the lifetime of patents
  - jurisdiction > different definitions limit comparability

- Essential for determining validity of protection
- National registers as primary sources
- > tomorrow
## EPO register legal status data

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**Title**
- **German:** VERWENDUNG VON ATAZANAVIR IN DER HIV- THERAPIE [2004/22]
- **English:** USE OF ATAZANAVIR IN HIV THERAPY
- **French:** UTILISATION DATAS ATAZANAVIR EN THERAPIE VIH

**Entry into regional phase**
- 12.03.2004
- 13.02.2004 Amendment by applicant (claims and/or description)
- 12.03.2004 Examination requested
- 21.10.2005 Dispatch of a communication from the examining division (Time limit: X04)
- 29.02.2006 Reply to a communication from the examining division
- 24.03.2006 Communication of intention to grant the patent
- 02.08.2006 Fee for grant paid
- 02.08.2006 Fee for printing paid

**Examination procedure**
- 14.03.2003 Request for preliminary examination filed
- International Preliminary Examining Authority: US
- 13.02.2004 Amendment by applicant (claims and/or description)
- 12.03.2004 Examination requested
- 21.10.2005 Dispatch of a communication from the examining division (Time limit: X04)
- 29.02.2006 Reply to a communication from the examining division
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- 02.08.2006 Fee for printing paid

**Oppositions**
- 05.07.2007 No opposition filed within time limit [2007/39]
Other patent information

- Patent family information, ie extensions to other OSF:
- Prior art search reports
- Examination file
- Value added information (commercial providers)
Other patent information

- Patent family information, ie extensions to other OSF:
  - derived from priority claims
  - different family definitions
  - available eg via INPADOC database
USE OF ATAZANAVIR IN HIV THERAPY

Bibliographic data
- Publication number: WO03020206 (A2)
- Publication date: 2003-03-13
- Inventor(s): EECHTOLD CLIFFORD M +
- Applicant(s): SQUIBB BRISTOL MYERS CO [US] +
- Classification:
  - International: A61K31/4402; A61K31/472; A61K31/4725; A61K31/496; A61K31/551; A61K31/7072; A61K31/707; A61K45/06; A61P3/06; A61P3/18; A61K; A61K31/4402; A61K31/472; A61K31/496; A61K31/551; A61K31/7042; A61K45/00; A61P3.00; A61P3/00; (IPCI-7): A61K
  - European: A61K45/06; A61K31/4725; A61K31/551; A61K31/7072
- Application number: WO2002US25675 20020821
- Priority number(s): US20010316745P 20010831

Abstract of WO 03020206 (A2)

A method for reducing elevated plasma LDL and/or triglyceride levels in an HIV-infected patient is disclosed. In this method, atazanavir (BMS-232632) can be used to treat HIV infection in patients exhibiting elevated plasma LDL-cholesterol and/or triglyceride levels, can be substituted for an offending HIV protease inhibitor used in such therapy, or can be used in combination with an HIV protease inhibitor metabolized by cytochrome P450 monoxygenase.
## Family list

26 application(s) for WO30020206 (A2)

Sorting criteria: Priority Date, Inventor, Applicant, ES inventor

<table>
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<th>Family No.</th>
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Other patent information

- Examination file
  - communication between office and applicant
  - check examination status/prospects
  - prepare opposition
  - parts accessible through file inspection
    - online
    - manual
EPO File Inspection in register

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<td>26.02.2006</td>
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<td>Maintenance of the application</td>
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PCT file inspection

Covers only international phase
Collective patent information

- From collections of patent publications further information can be derived:
  - Patterns of patenting activity, e.g. statistical analysis
    - Who is doing what (e.g. top applicants, inventors) ?
    - What is filed where ?
  - Patterns of innovation
    - Innovation trends/activities
    - Diversity of technology
    - Innovation tracks
    - Collaborations
  - Business information
Aggregations of patent information

individual application
↓
family
↓
patent data collections
↓
PLRs, FTOs, ....

▶ Each subsequent level creates new patent information that can be derived by analysing the previous aggregation
Products

more complex

less complex
Patent rights related to product

- Each patent protects only one invention
- Commercial products are protected by several distinct patent rights, e.g.
  - Active ingredient
  - Process for producing active ingredient
  - Use of active ingredient
  - Method for manufacturing tablet,......
- Patent searches can identify only individual technologies
- Products cannot be searched as such
- No obligation to disclose the involved technologies
Thank you

lutz.mailander@wipo.int