

PS (Pharmaceutical Substances)

Subject Coverage	<ul style="list-style-type: none"> Marketed Active Pharmaceutical Ingredients Preparation Methods for Pharmaceutical Substances 			
File Type	Substance			
Features	Thesaurus	None		
	Alerts (SDIs)	Not available		
	CAS Registry Number® Identifiers	<input checked="" type="checkbox"/>	Page Images	<input type="checkbox"/> STN® AnaVist™ <input type="checkbox"/>
	Keep & Share	<input checked="" type="checkbox"/>	SLART	<input checked="" type="checkbox"/> STN Easy® <input type="checkbox"/>
	Learning Database	<input type="checkbox"/>	Structures	<input checked="" type="checkbox"/>
Record Content	<ul style="list-style-type: none"> Records contain essential information, trade data and preparation methods for active pharmaceutical ingredients. For indexed pharmaceutical substances ATC, therapeutic use, chemical name, molecular formula, CAS Registry Number, EINECS Number, lethal dose, information on derivatives, and substance class are given. Furthermore are formulations, trade names and vendors, and an overview of intermediates from the compounds preparations present. Reaction schemes for industrial synthesis can be displayed as TIFF-images. The reactants and products are structure-searchable with a single reaction query. Roles are also structure-searchable. 			
File Size	<ul style="list-style-type: none"> Pharmaceutical ingredients launched from 1957 to December 2009 (03/2020) 2,460 pharmaceutical substances (03/2020) 			
Coverage	1957-December 2009 (03/2020)			
Updates	This file is static (03/2020)			
Language	English			
Database Producer	Georg Thieme Verlag Thieme Chemistry Rüdigerstrasse 14 70469 Stuttgart Germany Phone: +49 711 8931-772 Fax: +49 711 8931-777 Email: marketing@thieme-chemistry.com Copyright Holder			

**Database
Supplier**

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P.O. Box 2465
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Email: helpdesk@fiz-karlsruhe.de

Sources

- The U.S. Food and Drug Administration (FDA)
 - ATC Index from the WHO
 - Patents
 - Publications and databases in the field of organic chemistry
-

User Aids

- Online Helps (HELP DIRECTORY lists all help messages available)
 - STNGUIDE
-

Clusters

- BIOSCIENCE
 - CASRNS
 - COMPANIES
 - CORPSOURCE
 - HPATETS
 - PATENTS
 - PHARMACOLOGY
 - REACTIONS
 - STRUCTURE
- [STN Database Clusters](#) information (PDF)
-

Pricing

Enter HELP COST at an arrow prompt.

Search and Display Field Codes

Fields that allow left truncation are indicated by an asterisk (*).

General Search Fields

Search Field Name	Search Code	Search Examples	Display Codes
Basic Index* (contains single words from the fields CC, CN, CN.DRV, CN.INT, CO, DEF, EIN, EIN.DRV, MF, MF.DRV, MF.INT, PRE.COND, RN, RN.DRV, RN.INT, THER, TN) (1)	None or /BI	S CODEINE/BI S 60-00-4 S C10H11NO3	CN, DEF, DRV, EIN, INT, MF, RN, TRD
Accession Number Application Date (2) ATC Code Author CAS Registry Number Chemical Name Segment (1) Chemical Name (3) Corporate Name (Manufacturer) (4) Data Entry Date (2) Definition (Compound Class) Derivative CAS Registry Number Derivative Chemical Name Derivative EINECS Number Derivative Lethal Dose Derivative Molecular Formula Derivative Molecular Weight (2) Document Type EINECS Number Entry Date (2) Field Availability (5) Formulation Intermediate CAS Registry Number Intermediate Chemical Name Intermediate Chemical Name Segment Intermediate Molecular Formula International Standard (Document) Number (CODEN) Journal Title Launch Country Code (ISO code and text) Launch Year (2) Lethal Dose Molecular Formula Molecular Weight (2) Patent Assignee (4) Patent Country (WIPO code and text) Patent Number Preparation Conditions	/AN /AD /CC /AU /RN /CNS /CN /CO /DED /DEF /RN.DRV /CN.DRV /EIN.DRV /LD50.DRV /MF.DRV /MW.DRV /DT /EIN /ED /FA /FRM /RN.INT /CN.INT /CNS.INT /MF.INT /ISN /JT /LNC /LNY /LD50 /MF /MW (or /FW) /PA (or /CS) /PC /PN /PRE.COND	S 265009/AN S 19990101-20001231/AD S A01?/CC S 265009/AN S 40054-69-1/RN S KETOPROFEN/CNS S DIAZEPAM/CN S KNOLL?/CO S DED>2000 S TYROSINES/DEF S 50832-74-1/RN.DRV S CALCIUM SALT/CN.DRV S 200-055-2/EIN.DRV S 100 MG/KG ?/LD50.DRV S C5H8NNAO3S/MF.DRV S 150-160/MW.DRV S PATENT/DT S 200-014-9/EIN S 2009?/ED S FORMULATION/FA S AEROSOL?/FRM S 104-85-8/RN.INT S ABIETIC ACID/CN.INT S ACETALDEHYDE/CNS.INT S C20H12O8/MF.INT S JACSAT/ISN S J BIOL CHEM/JT S GB/LNC S 2000-2001/LNY S 1 G/KG ?/LD50 S C22H30N6O4S/MF S MW>500 S HOECHST?/PA S DE/PC S DE2004686/PN S STREPTOMYCES/PRE.COND	AN RE CC RE RN CN CN TRD DED DEF DRV DRV DRV DRV DRV DRV not displayed EIN ED not displayed FRM INT INT INT INT RE RE TRD TRD LD50 MF MW RE RE RE not displayed

General Search Fields (cont'd)

Search Field Name	Search Code	Search Examples	Display Codes
Priority Country (WIPO code and text)	/PRC	S WO/PRC	RE
Priority Date (2)	/PRD	S PRD>20010000	RE
Publication Date (2)	/PD	S 20020000-20021231/PD	RE
Publication Year (2)	/PY	S 2000-2001/PY	RE
Reference (contains single terms from the fields: Author, CODEN, Journal Title, Patent Assignee, Patent Country, Publication Date, Patent Number, Priority Country, Priority Date, and Publication Year)	/RE	S BASF/RE	RE
Status	/STA	S WFM/STA	TRD
Therapeutic Use	/THER	S ANTIALLERGIC/THER	THER
Trade Name	/TN	S DIANE 35/TN	TRD

- (1) In addition to right truncation, left and simultaneous left and right truncation are available in this fields. At least 4 characters need to be used for the length of the stem.
- (2) Numeric search field which may be searched with numeric operators or ranges.
- (3) CN search field contains Generic Names, Synonyms, Systematic Names, and Trade Names.
- (4) Search with implied (S) proximity is available in this field.
- (5) Searching for all information available in each display field.

Structure Search Terms

Terms (1)	Search Examples
L-numbers of structures built using the STRUCTURE command or uploaded from STN Express (Boolean logic allowed between the L-numbers)	S L1 SSS
L-numbers of screen sets created using the SCREEN command (Boolean logic allowed between the L-numbers)	S L3 OR L4 SSS
L-numbers of structures built using the STRUCTURE command or uploaded from STN Express combined with L-numbers of screen sets created using the SCREEN command (Boolean logic allowed between the L-numbers)	S L1 AND L2 NOT L3

- (1) The L-number answer set from a structure search may be combined with text terms, e.g., 'S L6 AND ANTIALLERGIC/THER'.

Types of Structure Searching

Type	Definition	Search Code	Search Examples
Closed Substructure	Search for substances that match the query exactly. Substitution is allowed at positions opened by CONNECT. Additional components may be retrieved.	CSS	SEARCH L1 CSS FULL SEA L5 CSS S L5 CSS
Substructure (default)	Search for substances that match the query. Substitution is allowed at all open position. Additional components may be retrieved.	SSS	SEARCH L1 SSS FULL SEA I4 SSS S L1 SSS

Scopes of Structure Searching

Scope	Definition	Search Code	Search Examples
FULL (default)	Search 100 % of the file.	FUL	S L2 SSS FUL
Subset FULL	Search 100 % of an answer set created by the search in PS.	SUB FUL	S L8 SUB=L6 CSS FUL

DISPLAY and PRINT Formats

Any combination of codes may be used to display or print answers. Multiple codes must be separated by spaces or commas, e.g., D L1 1-5 FRM, TRD. The fields are displayed or printed in the order requested. Hit-term highlighting is available in AN, CC, CN, DED, DEF, DRV, EIN, ED, FRM, LD50, MF, MW, RN, and THER.

Highlighting must be ON during SEARCH to use the HIT, and OCC formats.

Format	Content	Examples
AN CC CN DED DEF DRV (CN.DRV, EIN.DRV, LD50.DRV, MF.DRV, MW.DRV, RN.DRV) EIN ED (1) FRM GI (PRE) (2) INT (CN.INT, MF.INT, RN.INT) LD50 MF MW RE RN THER TRD (CO, LNC, LNY, SRA, TN)	Accession Number Classification Code Chemical Name Data Entry Date Definition (Compound Class) Derivative EINECS Number Entry Date Formulation Graphical Image (Preparation(s)) Intermediate(s) Lethal Dose Molecular Formula Molecular Weight Reference CAS Registry Number Therapeutic Use Trade Data	DISPLAY L2 1-10 AN D CC DISPLAY CN 1-5 D DED D DEF DIS DRV L2 1 D EIN D ED D FRM D GI L9 1-5 D INT DIS LD50 D MF D MW D REF L5 1 DIS RN D THER D TRD L3 1c
ALL IALL IDE IIDE IPRED ISTD PRED (GID) STD SCAN (3)	AN, IDE, DRV, TRD, FRM, PRED ALL, indented with text labels DED, CN, TN, CC, THER, RN, MF, MW, EIN, LD50, DEF IDE, indented with text labels PRED, indented with text labels STD, indented with text labels GI, INT, RE IDE, DRV, TRD, RE CN (Generic Name), CC (display with no answer number)	D L2 1 ALL D IALL DIS IDE L2 1-10 D IIDE DIS IPRED DISPLAY ISTD L8 1 DIS PRED L4 DISPLAY L1 STD 1-5 D SCAN
HIT (4) KWIC OCC	Hit term(s) and field(s) Up to 50 words before and after hit term(s) (KeyWord-In-Context) Number of occurrences of hit term(s) and field(s) in which they occur	D HIT D KWIC D OCC

PS

- (1) Custom display only.
- (2) You can use the GI format in the DISPLAY command for the images of all available synthesis paths for a title substance. Any program that handles TIFF images compressed in Group 4 fax format, e.g., STN Express, may be used to capture the graphic images.
- (3) SCAN must be specified on the command line, i.e., D SCAN or DISPLAY SCAN.
- (4) The HIT display can not be used after a structure search. In order to display reactions after a structure search use the display format GI (alias PRE).

SELECT, ANALYZE, and SORT Fields

The SELECT command is used to create E-numbers containing terms taken from the specified field in an answer set.

The ANALYZE command is used to create an L-number containing terms taken from the specified field in an answer set.

The SORT command is used to rearrange the search results in either alphabetic or numeric order of the specified field(s).

Field Name	Field Code	ANALYZE/ SELECT (1)	SORT
Accession Number	AN	Y	N
ATC Code	CC	Y	Y
Author	AU	Y (2)	N
CAS Registry Number	RN	Y	Y
Chemical Name	CN	Y (3)	N
Corporate Name (Manufacturer)	CO	Y (2)	N
Data Entry Date	DED	Y	Y
Definition (Compound Class)	DEF	Y	N
Derivative CAS Registry Number	RN.DRV	Y (5)	N
EINECS Number	EIN	Y	Y
Intermediate CAS Registry Number	RN.INT	Y (2,5)	N
Intermediate Chemical Name	CNT	Y (2,4)	N
Molecular Formula	MF	Y	Y
Molecular Weight	MW	Y	Y
Patent Assignee	PA	Y (2)	N
Patent Number	PN	Y (2)	N
Therapeutic Use	THER	Y	Y
Trade Name	TN	Y (2)	N

- (1) Hit may be used to restrict extracted terms to terms that match the search expression used to create the answer set, e.g., SEL HIT TI.
- (2) SELECT HIT or ANALYZE HIT are not valid with this field.
- (3) Selects or analyzes the Generic Names, Synonyms, Systematic Names, and Trade Names of the title compounds with /CN appended to the terms created by SELECT.
- (4) Appends /CN to the terms created by SELECT.
- (5) Appends /RN to the terms created by SELECT.

Sample Records**DISPLAY IALL**

Accession Number 266535
 Data Entry Date 20080731
 Chemical Name GENERIC: Levothyroxine
 Chemical Name SYSTEMATIC:
 O-(4-hydroxy-3,5-diiodophenyl)-3,5-diiodo-L-tyrosine
 Trade Name Berlthyrox; Euthyrox; Thevier; L-Thyroxin
 'Henning'; numerous combination preparations;
 Euthyral; Levothyrox; L-Thyroxine Roche;
 Eltroxine; Tiroide; Tirosint; Thyradin;
 Levothroid; Levoxyl; Naturethroid; Synthroid;
 Westhroid
 ATC Code H03AA01
 Therapeutic Use(s) thyroid hormone
 CAS Registry Number 51-48-9
 Molecular Formula C15H11I4NO4
 Molecular Weight 776.87
 EINECS Number 200-101-1

Definition (Compound Class) Iodohydroxyphenylcarboxylic acids,
 Iodohydroxyphenoxyphenylcarboxylic acids and
 esters

Definition (Compound Class) Tyrosines

Derivative Chemical Name monosodium salt
 CAS Registry Number 55-03-8
 Molecular Formula C15H10I4NNaO4
 Molecular Weight 798.85
 EINECS Number 200-221-4
 LD50 20 mg/kg (R, i.p.); 50 mg/kg (R, s.c.)

Trade Data

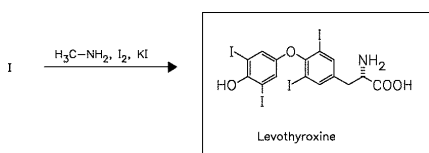
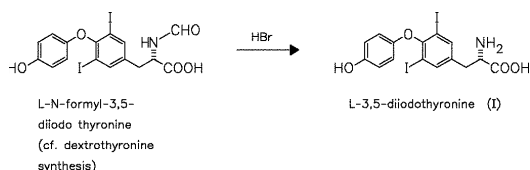
Launch Country	Trade Name	Company Name (Manufacturer)	Comment
DE	Berlthyrox	Berlin-Chemie	
DE	Euthyrox	Merck	<--
DE	Thevier	GlaxoSmithKline	
DE	L-Thyroxin 'Henning'	Henning Berlin	
DE	numerous combination preparations		
FR	Euthyral	Merck Lipha	
FR	Levothyrox	Merck Lipha	
FR	L-Thyroxine Roche	Roche	
GB	Eltroxine	Goldshield	
IT	Tiroide	Amsa	comb.
IT	Tirosint	Amsa	
JP	Thyradin	Aska	
US	Levothroid	Forest	as sodium salt
US	Levoxyl	King	
US	Naturethroid	Western Research Labs.	
US	Synthroid	Abbott	as sodium

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US	Westhroid	Western Research Labs.	salt
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Formulation(s) powder 0.1 mg; tabl. 0.025 mg, 0.05 mg, 0.075 mg, 0.1 mg, 0.125 mg, 0.150 mg, 0.175 mg, 0.2 mg, 0.3 mg (as sodium salt)

Preparation(s)



Intermediate(s) in Substance Preparation

Molecular Formula	Chemical Name
C16H13I2NO5	l-N-formyl-3,5-diiodothyronine

Reference(s)

- (1) Nahm, H.; Siedel, W.: Chem. Ber. (CHBEAM) 96, 1 (1963).
- (2) DE 1 067 826 (Hoechst; appl. 1955).
alternative syntheses from l-tyrosine via l-N-acetyl-3,5-diiodotyrosine ethyl ester:
- (3) DE 1 077 673 (Hoechst; appl. 1958).
- (4) DE 1 064 529 (G. Hillmann; appl. 1956).
- (5) DE 1 065 855 (G. Hillmann; appl. 1956).
- (6) US 2 803 654 (Baxter Labs.; 1957; prior. 1953).
- (7) US 2 889 363 (Baxter Labs.; 1959; appl. 1955).
- (8) US 2 889 364 (Baxter Labs.; 1959; appl. 1957).

DISPLAY STD

AN 268308
DED 20080731
CN GENERIC: Atorvastatin calcium
CN SYNONYM: CI-981; YM-548
CN SYSTEMATIC: [R-(R*,R*)]-2-(4-fluorophenyl)-β,δ-dihydroxy-5-(1-methylethyl)-3-phenyl-4-[(phenylamino)carbonyl]-1H-pyrrole-1-heptanoic acid calcium salt (2:1)

March 2020

TN Sortis; Caduet; Tahor; Lipitor; Lipitor; Torvast; Totalip; Lipitor;
Lipitor
CC C10AA05
THER hypolipidemic, HMG-CoA-reductase inhibitor
RN 134523-03-8
MF C66H68CaF2N4O10
MW 1155.36

DEF Anilides
DEF Fluorocarboxylic acids
DEF Heptanoic and Heptenoic acids
DEF Hydroxy acids
DEF Pyrroles
DRV CN.DRV free acid
RN.DRV 134523-00-5
MF.DRV C33H35FN2O5
MW.DRV 558.65

TRD

LNY	LNC	TN	CO	STA	COM	
	DE	Sortis	Parke Davis			<--
	FR	Caduet	Pfizer		comb.	
	FR	Tahor	Pfizer			
	GB	Lipitor	Pfizer			
	IT	Lipitor	Warner-Lambert			
	IT	Torvast	Pfizer			
	IT	Totalip	Guidotti			
	JP	Lipitor	Astellas			
	US	Lipitor	Parke Davis			

RE

- (1) US 4 681 893 (Warner-Lambert; 21.7.1987; appl. 30.5.1986).
- (2) US 5 273 995 (Warner-Lambert; 28.12.1993; appl. 26.2.1991; USA-prior. 21.7.1989).
- (3) EP 409 281 (Warner-Lambert; appl. 23.1.1991; USA-prior. 21.7.1989, 26.2.1991).

review:

- (4) DE 1 061 073 (Warner-Lambert; appl. 20.7.1990; USA-prior. 21.7.1989).
- (5) Roth, B.D. et al.: J. Med. Chem. (JMCMAR) 34, 357-366 (1991).
- (6) Nanninga, T. et al.: Tetrahedron Lett. (TELEAY) 33, 2279-2282 (1992).
- (7) Li, J.J.; Johnson, D.S.; Sliskovic, D.R.; Roth, B.D.: Contemporary Drug Synthesis, Wiley-Interscience, 113-124 (2004).
- (8) a1 US 4 647 576 (Warner-Lambert; 3.3.1987; appl. 10.12.1984; USA-prior. 24.9.1984).
- (9) US 5 124 482 (Warner-Lambert; 23.6.1992; appl. 14.11.1991; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990).

alternative synthesis of intermediate I:

- (10) US 5 149 837 (Warner-Lambert; 22.9.1992; appl. 12.2.1992; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990, 14.11.1991).
- (11) WO 2 003 004 457 (Ciba specialty Chemicals; appl. 25.6.2002; EP-prior. 4.7.2001).

improved process:

- (12) a2a3 US 5 273 995 (Warner-Lambert; 28.12.1993; appl. 26.2.1991; USA-prior. 21.7.1989).
- (13) WO 2 005 087 723 (Apotex Pharmachem; appl. 11.3.2005; CA-prior.

- 15.3.2004).
- (14) CA 2 460 935 (Apotex Pharmachem; appl. 15.3.2004).
- (15) a4 US 4 681 893 (Warner-Lambert; appl. 21.7.1987; USA-prior. 30.5.1986).
- (16) bc1 US 5 155 251 (Warner-Lambert; 13.10.1992; appl. 11.10.1991).
- (17) c1 US 5 103 024 (Warner-Lambert; 7.4.1992; appl. 17.10.1990).
- (18) US 6 433 213 (Warner-Lambert; 13.8.2002; appl. 2.12.1998, 16.6.2000; USA-prior. 19.12.1997).
- (19) US 6 596 879 (Warner-Lambert; 22.7.2003; appl. 11.6.2002; USA-prior. 19.12.1997, 2.12.1998).
- (20) US 6 962 994 (Warner-Lambert; 8.11.2005; appl. 11.4.2003; USA-prior. 19.12.1997, 11.6.2002).
- (S)-3,4-dihydroxybutanoic acid and (S)-3-hydroxybutyrolactone from carbohydrates (e.g. maltose, lactose):
- (21) c2 US 5 248 793 (Warner-Lambert; 28.9.1993; appl. 21.12.1992; USA-prior. 17.10.1990, 27.12.1991).
- (22) d1 US 5 292 939 (Hollingsworth, R.I., Michigan State University; 8.3.1994; appl. 26.10.1992; USA-prior. 13.5.1991).
- (23) US 5 319 110 (Hollingsworth, R.I., Michigan State University; 7.6.1994; appl. 26.10.1992; USA-prior. 13.5.1991).
- (24) US 5 374 773 (Hollingsworth, R.I., Michigan State University; 20.12.1994; appl. 27.10.1993; USA-prior. 13.5.1991, 26.10.1992).
- (25) US 6 239 311 (Hollingsworth, R.I., Michigan State University; 29.5.2001; appl. 24.4.2000).

or from amylopektin after enzymatic treatment with α -amylase and pullulanase:

- (26) US 5 998 633 (Warner-Lambert; 7.12.1999; appl. 1.7.1997; USA-prior. 29.7.1996).
- (27) US 6 124 122 (Samsung FineChem.; 26.9.2000; appl. 23.7.1999; KR-prior. 24.7.1998).
- (28) US 6 221 639 (Samsung FineChem.; 24.4.2001; appl. 23.7.1999; KR-prior. 24.7.1998).
- (29) US 6 251 642 (Samsung FineChem.; 26.6.2001; appl. 23.7.1999; KR-prior. 24.7.1998).

continous process:

- (30) US 6 713 290 (Samsung FineChem.; 30.3.2004; appl. 6.9.2001; KR-prior. 24.7.2001).
- (31) US 6 288 272 (Samsung FineChem.; 11.9.2001; appl. 23.7.1999; KR-prior. 24.7.1998).
- (32) d2 US 4 994 597 (Kanegafuchi; 19.2.1991; appl. 27.4.1989; J-prior. 27.4.1988).

[chemoenzymatic syntheses of biulding blocks for statin side chains]
chemoenzymatic synthesis of the lactole side chain by condensation of acetaldehyde with chloroacetaldehyde or cyanoacetaldehyde or 3-azidopropionaldehyde in presence of novel aldolases and converting into the aminoethylactone:

- (33) d3 Mueller, M.: Angew. Chem. Int. Ed. (ACIEF5) 44, 362-365 (2005).
alternative syntheses routes - 1,6-heptadien-4-ol as educt for side chain:
- (34) WO 2 004 027 075 (Diversa; appl. 19.8.2003; USA-prior. 20.9.2002, 9.5.2003).
- (35) US 5 003 080 (Warner-Lambert; 26.3.1991; appl. 1.2.1989; USA-prior. 22.2.1988).
- (36) US 5 097 045 (Warner-Lambert; 17.3.1992; appl. 9.10.1990; USA-prior. 22.2.1988, 1.2.1989).
- (37) US 5 124 482 (Warner-Lambert; 23.6.1992; appl. 14.11.1991; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990).
- (38) US 5 149 837 (Warner-Lambert; 22.9.1992; appl. 12.2.1992; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990, 14.11.1991).
- (39) US 5 216 174 (Warner-Lambert; 1.6.1993; appl. 1.6.1992; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990, 14.11.1991, 12.2.1992).

- (40) US 5 245 047 (Warner-Lambert; 14.9.1993; appl. 16.2.1993; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990, 14.11.1991, 12.2.1992, 1.6.1992).
asymmetric hydrogenation of the diketo side chain with Ru-complexes:
- (41) US 5 280 126 (Warner-Lambert; appl. 6.5.1993; USA-prior. 22.2.1988, 1.2.1989, 9.10.1990, 14.11.1991, 12.2.1992, 1.6.1992, 16.2.1993).
- (42) US 6 476 235 (Warner-Lambert; 5.11.2002; appl. 17.12.2001; USA-prior. 9.1.2001).
- (43) US 6 545 153 (Warner-Lambert; 8.4.2003; appl. 18.7.2002; USA-prior. 9.1.2001, 17.12.2001).
- (44) US 6 933 393 (Warner-Lambert; 23.8.2005; appl. 21.1.2003; USA-prior. 9.1.2001, 17.12.2001, 18.7.2002).
condensation of I with aminoethyl lactone:
- (45) US 6 777 560 (Warner-Lambert; 17.8.2004; appl. 6.8.2003; USA-prior. 6.8.2002).
- 3,5-phenylboranato hexanoates as intermediates:
- (46) WO 2 005 012 246 (Avecia Pharmaceutical; appl. 23.7.2004).
- (47) WO 2 002 057 274 (Biocon; appl. 14.6.2001; IN-prior. 19.1.2001).
- (48) WO 2 003 070 733 (Biocon; appl. 25.2.2002).
- lactonisation process:
- (49) WO 2 004 113 314 (Biocon; appl. 18.6.2004; IN-prior. 23.6.2003).
- (50) US 6 417 374 (Council Sci. & Res. India; 9.7.2002; appl. 15.2.2001).
- hydrolysis with calcium hydroxide:
- (51) US 6 380 401 (Merck & Co.; 30.4.2002; appl. 23.10.2001).
- crystalline forms of atorvastatin calcium:
- (52) US 2 002 099 224 (E.Ishai; 25.7.2002; appl. 24.11.2001).
- (53) US 5 959 156 (Warner-Lambert; 19.10.1999; appl. 29.9.1997; USA-prior. 17.7.1995).
- (54) WO 9 703 959 (Warner-Lambert; appl. 8.7.1996; USA-prior. 17.7.1995).
- (55) WO 9 703 958 (Warner-Lambert; appl. 6.2.1997; USA-prior. 17.7.1995).
- crystalline forms I - IV of hemicalcium salt trihydrate:
- (56) US 6 528 661 (Teva; 4.3.2003; appl. 24.10.2001; prior. 16.11.2000, 13.8.2001, 1.10.2001).
- crystalline form III:
- (57) US 5 969 156 (Warner-Lambert; 19.10.1999; appl. 29.9.1997).
- crystalline forms V - XIX:
- (58) US 6 121 461 (Warner-Lambert; 19.9.2000; appl. 8.7.1996, 26.7.1999; USA-prior. 17.7.1995).
- factory process for cryst. atorvastatin trihydrate hemicalcium salt.
- (59) US 6 605 729 (Warner-Lambert; 12.8.2003; appl. 28.6.2002; USA-prior. 29.6.2001).
- production scale process for cryst. atorvastatin calcium:
- (60) US 6 600 051 (Warner-Lambert; 29.7.2003; appl. 14.6.2002; IE-prior. 17.12.1999).
- crystalline form VII:
- (61) US 6 605 728 (Warner-Lambert; 12.8.2003; appl. 14.6.2002; IE-prior. 17.12.1999).
- one-pot reaction:
- (62) US 6 605 636 (Teva; 12.8.2003; appl. 5.11.2001; USA-prior. 3.11.2000).
- process for the production of amorphous atorvastatin:
- (63) US 6 777 552 (Teva; 17.8.2004; appl. 16.8.2002; prior. 16.8.2001).
- (64) US 6 087 511 (Warner-Lambert; 11.7.2000; appl. 15.1.1998).
- preparation of amorphous atorvastatin calcium:
- (65) US 6 274 740 (Warner-Lambert; 14.8.2001; appl. 2.12.1999).
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