Date	December 24, 2014	Court	Tokyo District Court, 29th Civil Division
Case number	2013 (Wa) 4040		
– A case in which the court recognized infringement under the doctrine of equivalents with regard to a patent for an invention of the process of manufacturing a vitamin D derivative.			

Summary of the Judgment

In this case, the plaintiff, which is one of the joint holders of a patent right for an invention titled "synthetic intermediate for vitamin D and steroidal derivative and method of producing the intermediate" (Patent No. 3310301, the "Patent Right"), alleged that the production process (the "defendants' method") of the active pharmaceutical ingredients (Defendants' Product 1) imported and sold by Defendant 1 and the pharmaceutical preparations (Defendants' Product 2) sold by Defendants 2 to 4 can be considered to be equivalent to the invention described in Claim 13 of the Patent Right (the "Corrected Invention," since a request for correction was filed during the pendency) and that said production process falls within the technical scope of the Corrected Invention. Under Article 2, paragraph (3), item (iii) and Article 100, paragraphs (1) and (2) of the Patent Act, the plaintiff sought an injunction against the import, assignment, etc. of the defendants' products and demanded disposal thereof.

The issues in this case are [i] whether Equivalence Requirements 1 to 5 are satisfied (Issues 1 to 5), [ii] whether the grounds for invalidation exist (Issues 6 to 10) and [iii] whether an injunction is necessary (Issue 11).

The difference between the Corrected Invention and the defendants' method lies in the fact that, in the case of the Corrected Invention, the commencing material and the intermediate to produce the objective substance of the cis isomer is the cis isomer; whereas, in the case of the defendants' method, it is the trans isomer, which is a geometrical isomer of the cis isomer.

In this judgment, the court found as follows: [i] The defendants' method and the Corrected Invention share important part of the means of solving the problem, i.e., using the two-stage reaction. The issue of whether the commencing material and the intermediate are the cis isomer or the trans isomer is not important to the means of solving the problem. Therefore, the defendants' method satisfies Equivalence Requirement 1 (Issue 1); [ii] The defendants' method has the same function and effect as those of the Corrected Invention and satisfies Equivalence Requirement 2 (Issue 2); [iii] The defendants' method can be easily conceived of by a person ordinarily skilled in the art based on the Corrected Invention and satisfies Equivalence Requirement 3 (Issue 3);

[iv] The defendants' method cannot be considered to be easily conceived of by a person ordinarily skilled in the art based on a technology in the public domain and satisfies Equivalence Requirement 4 (Issue 4); [v] the Corrected Invention cannot be considered to have intentionally limited the commencing material and the intermediate to the cis isomer or to have intentionally excluded the trans isomer, and the Corrected Invention satisfies Equivalence Requirement 5 (Issue 5); [vi] There are no grounds for invalidation of the Corrected Invention, such as violation of the inventive step requirement, the enablement requirement, or the support requirement (Issues 6 to 10); and [vii] An injunction is found to be necessary (Issue 11). In conclusion, the court accepted the plaintiff's request for an injunction against the import, assignment, etc. of Defendants' Products 1 and 2, which were manufactured by the defendants' method.

Judgment rendered on December 24, 2014; the original was received on the same day; court clerk
2013 (Wa) 4040 Case of Seeking an Injunction against a Patent Right Infringement
Date of conclusion of oral argument: September 12, 2014

Judgment

Plaintiff: Chugai Pharmaceutical Co., Ltd.
Defendant: DKSH Japan K.K.
(Hereinafter referred to as "Defendant DKSH")
Defendant: Iwaki Seiyaku Co., Ltd.
(Hereinafter referred to as "Defendant Iwaki Seiyaku")
Defendant: Takata Pharmaceutical Co., Ltd.
(Hereinafter referred to as "Defendant Takata Pharmaceutical")
Defendant: Pola Pharma Inc.
(Hereinafter referred to as "Defendant Pola Pharma")

Main text

1. Defendant DKSH shall neither import nor assign the maxacalcitol active pharmaceutical ingredient described in Item List 1 attached to this judgment until September 3, 2017.

2.(1) Defendant Iwaki Seiyaku shall neither assign nor offer for assignment the maxacalcitol preparation described in (1) in Item List 2 attached to this judgment until September 3, 2017.

(2) Defendant Takata Pharmaceutical shall neither assign nor offer for assignment the maxacalcitol preparation described in (2) in Item List 2 attached to this judgment until September 3, 2017.

(3) Defendant Pola Pharma shall neither assign nor offer for assignment the maxacalcitol preparation described in (3) in Item List 2 attached to this judgment until September 3, 2017.

3. Defendant DKSH shall dispose of the maxacalcitol active pharmaceutical ingredient described in Item List 1 attached to this judgment.

4.(1) Defendant Iwaki Seiyaku shall dispose of the maxacalcitol preparation described in (1) in Item List 2 attached to this judgment.

(2) Defendant Takata Pharmaceutical shall dispose of the maxacalcitol

preparation described in (2) in Item List 2 attached to this judgment.

(3) Defendant Pola Pharma shall dispose of the maxacalcitol preparation described in (3) in Item List 2 attached to this judgment.

5. The defendants shall bear the court costs.

Facts and reasons

No. 1 Claims

The same as paragraphs 1 to 4 of the main text.

No. 2 Outline of the case

1. The plaintiff is one of the joint owners of the patent right for Patent No. 3310301 in relation to an invention titled "intermediates for the synthesis of vitamin D and steroid derivatives and process for preparation thereof" (**hereinafter, said patent right is referred to as the "Patent Right"; the patent pertaining to the Patent Right is referred to as the "Patent"**). The plaintiff alleged that the maxacalcitol active pharmaceutical ingredient described in Item List 1 attached to this judgment, which is imported and sold by Defendant DKSH (**hereinafter referred to as the "Defendant's Product 1"**), and the process described in the Process List attached to this judgment (**hereinafter referred to as the "Defendant's Process"**; incidentally, Defendant's Product 1 is identified as having been prepared by the Defendant's Process in Item List 1 attached to this judgment, and Defendant's Product 2 is identified as a maxacalcitol preparation prepared by the Defendant's Process in Item List 2 attached to this judgment), which is the process for preparation of the maxacalcitol preparations described in (1) to (3) in Item List 2 attached to this judgment which are sold by Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma, respectively (**hereinafter, each of said maxacalcitol preparations is independently referred to as "Defendant's Product 2(1)," etc., and are collectively referred to as "Defendants' Products 2"; these preparations and Defendant's Product 1 are collectively referred to as "Defendants' Products"**), are equivalent to and fall under the technical scope of the invention (**hereinafter referred to as the "Invention"**; incidentally, in the cases where whether a relevant patent is recognized as one that should be invalidated by a trial for patent invalidation becomes an issue in a lawsuit pertaining to infringement of a patent right, the court conducts examinations and makes determinations while deeming that a patent was granted with respect to each claim [see Article 104-3, paragraph (1), main paragraph of Article 123, paragraph (1), and Article 185 of the Patent Act]; therefore, the patent for the invention pertaining to Claim 13 [the Invention] in the Patent **may be referred to as the "Patent for the Invention"**; in addition, the patent for an invention pertaining to a specific claim [for

example, Claim 1] other than Claim 13 in the Patent **may be referred to as the "Patent for the Invention pertaining to Claim 1," etc.**) pertaining to Claim 13 (hereinafter referred to as "Claim 13 of the Patent" or simply as "Claim 13"; incidentally, a similar expression may be used in relation to a specific claim other than Claim 13) in the scope of claims of the description pertaining to the Patent (the description as of the registration of establishment of the Patent Right; **hereinafter, this description and the drawings are collectively referred to as the "Description"**; incidentally, as the Patent pertains to an application filed before June 30, 2003, the description pertaining to the Patent includes the scope of claims [Article 1, item (ii) and Article 3, paragraph (1) of the Supplementary Provisions of Act No. 24 of 2002 and Cabinet Order No. 214 of 2003]; for convenience of reference, a copy of the patent gazette pertaining to the Patent [Exhibit Ko 3] is attached at the end of this judgment). Based on this allegation, the plaintiff filed this action to seek an injunction against the import, assignment, etc. of the Defendants' Products and disposal thereof under Article 2, paragraph (3), item (iii) and Article 100, paragraphs (1) and (2) of the Patent Act.

The defendants allege that the Defendant's Process is not equivalent to the Invention and that the Patent for the Invention is recognized as one that should be invalidated by a trial for patent invalidation. Based on this allegation, the defendants argue against the plaintiff.

2. Facts on which the decision is premised (evidence, etc. is described at the end for facts other than those undisputed by the parties)

(1) Parties

A. The plaintiff is a stock company engaging in the business of research, development, preparation, sale, and import and export, etc. of medicines.

B. Defendant DKSH is a stock company engaging in the business of import, sale, etc. of medicines.

C. Each of Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma is a stock company engaging in the business of sale, etc. of medicines, respectively.

(2) Maxacalcitol

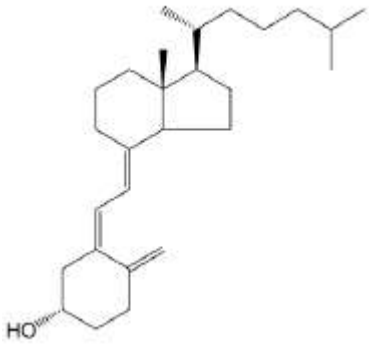
The plaintiff prepares and sells products named "Oxarol Ointment" and "Oxarol Lotion," respectively, which are cures for keratoma and whose active ingredient is maxacalcitol, an activated vitamin D_3 derivative.

For many years, calcium metabolism-controlling activity has been known as a physiological activity of activated vitamin D_3. A broad range of new activities, including cell growth-inhibiting activity and differentiation-inducing activity, were

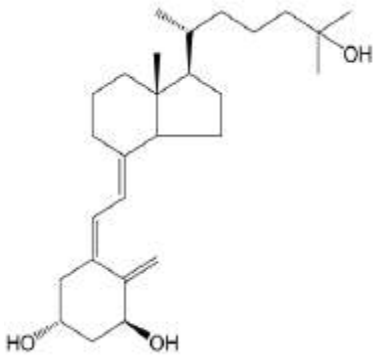
discovered, and activated vitamin D_3 has become expected to serve as a cure for dyskeratosis. However, activated vitamin D_3 has a problem of a side effect, that is, an increase in the blood calcium level.

The plaintiff discovered that maxacalcitol, which is a substance that is made by modifying the chemical structure of calcitriol, which is activated vitamin D_3, has weak blood calcium level increasing activity though it has cell growth-inhibiting activity and differentiation-inducing activity. That is, the drawing below to the left indicates vitamin D_3 (inactive), and the drawing below in the middle indicates calcitriol (1α,25-dihydroxy vitamin D_3). The plaintiff discovered that it is possible to obtain a substance, whose growth-inhibiting activity is better than calcitriol by 10 to 100 times and whose blood calcium and phosphorus level increasing activity is significantly weaker than calcitriol, by substituting the methylene group at position 22 of calcitriol with the oxygen atom (entire import of argument).

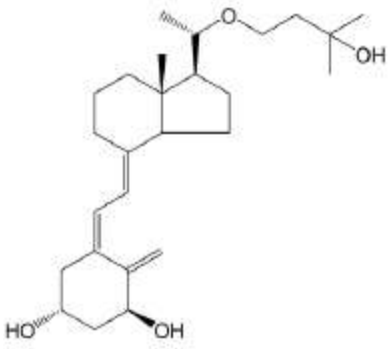
The substance having this structure is maxacalcitol (the drawing on the right).



Vitamin D_3



Calcitriol (1α,25-dihydroxy vitamin D_3)



Maxacalcitol

On December 26, 1985 (priority claim: December 28, 1984 (priority date)), the plaintiff filed a patent application (Exhibit Ko 1) for 9,10-seco-5,7,10(19)-pregnatriene derivative, which contained the new substance of maxacalcitol. The plaintiff obtained the registration of establishment of a patent right therefor (Patent No. 1705002) in October 1992. The duration of said patent right expired on December 26, 2010 after going through the registration of extension of the duration.

The Invention is related to a process for the preparation of a compound pertaining to Constituent Feature A containing maxacalcitol (defined later in (4)).

(3) Patent Right

The plaintiff jointly owns the following patent right (the "Patent Right") fifty-fifty with the Trustees of Columbia University in the City of New York (**hereinafter referred to as "Columbia University"**).

A. Patent number: Patent No. 3310301

B. Title of the invention: Intermediates for the synthesis of vitamin D and steroid derivatives and process for preparation thereof

C. Filing date: September 3, 1997

D. Application number: Patent Application No. 1998-512795

E. Priority date: September 3, 1996 (a priority claim based on US60/025,361; **hereinafter referred to as the "Priority Date"**)

F. Registration date: May 24, 2002

G. Extension of the duration: On February 24, 2009, an application for the registration of extension of the duration of a patent right was filed in relation to the Patent Right. On March 31, 2010, the extension of the duration of the Patent Right was registered with the following content under Article 67, paragraph (2) of the Patent Act (incidentally, the effect of the aforementioned registration of extension does not become a problem in this case because the plaintiff seeks an injunction for the period until the last day of the duration before the extension of registration was registered).

(A) Disposition which serves as a reason for the extension of the duration of the Patent Right

Approval set forth in Article 14, paragraph (9) of the Pharmaceutical Affairs Act (the Act prior to the change of the title of the law by Act No. 84 of 2013) pertaining to a medicine as provided for in said paragraph

(B) Number to specify the disposition

Approval No. 21800AMX10386000

(C) Article subject to the disposition

Maxacalcitol (generic name)

(D) Usage specified in relation to the article subject to the disposition

Palmoplantar pustulosis

(E) Period of the extension

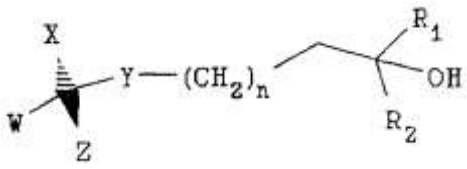
Five years

(4) Invention

The statement of Claim 13 of the Patent is as described in the [Claim 13] sections of the [Scope of claims] in the patent gazette attached to this judgment (copy), and it can be segmented into the following constituent features (**hereinafter, each constituent feature pertaining to segmentation is referred to as "Constituent Feature [A-1],"**

etc. corresponding to reference letters; Constituent Features [A-1] to [A-6] are collectively referred to as "Constituent Feature A," and Constituent Features [B-1] to [B-3] are collectively referred to as "Constituent Feature B").

[A-1] A process for preparing a compound having the following structure:



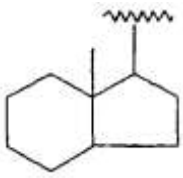
[A-2] (in the formula, n is an integer from 1 to 5;

[A-3] each of R_1 and R_2 independently is optionally substituted C1-C6 alkyl;

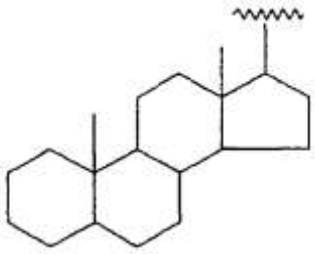
[A-4] each of W and X is independently hydrogen or C1-C6 alkyl;

[A-5] Y is O, S or NR_3 where R_3 is hydrogen, C1-C6 alkyl or a protective group; and

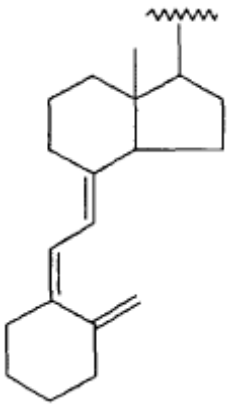
[A-6] Z is a CD ring structure of the formula:



a steroid ring structure of the formula:



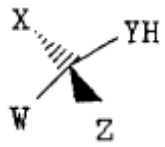
or a vitamin D structure of the formula:



wherein each of the structures of Z may optionally have one or more protected or unprotected substituents and/or one or more protective groups, and wherein any ring of the structure of Z may optionally have one or more unsaturated bonds);

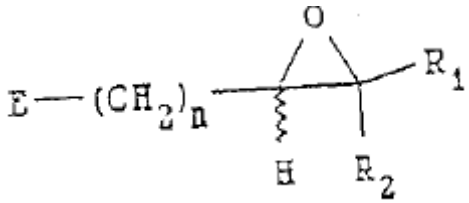
[E] which comprises:

[B-1] [a] the step of reacting a compound having the following structure:

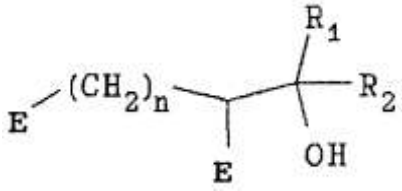


(in the formula, W, X, Y and Z are as defined above)

[B-2] in the presence of a base, with a compound having the following structure:

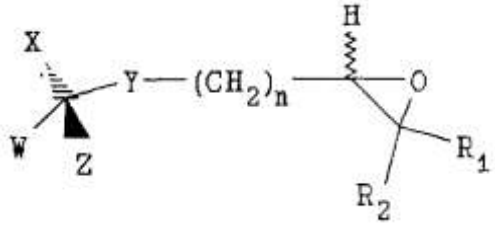


or



(in the formula, n, R_1, and R_2 are as defined above, and E is an eliminating group)

[B-3] to produce an epoxide compound having the following structure:



[C] [b] the step of treating the epoxide compound with a reducing agent to produce the compound; and

[D] [c] the step of recovering the compound so produced.

(5) Request for a trial for patent invalidation and request for correction

A. Cerbios-*Pharma* SA (**hereinafter referred to as "Cerbios"**), which is a Swiss corporation, filed a request for a trial for patent invalidation (Invalidation Trial No. 2013-800080) in relation to the invalidation of the Patent (Exhibit Ko 28).

On September 25, 2013, Columbia University and the plaintiff submitted a written request for correction dated the same (Exhibit Ko 15) to correct the "description and scope of claims" of the Patent as described in the "corrected description and scope of claims" (the "description and scope of claims" and "corrected description and scope of claims" are understood as erroneous descriptions, and they should be the "description" and "corrected description," respectively; as mentioned above, as the Patent pertains to an application filed before June 30, 2003, the scope of claims is not isolated from the description; for convenience of reference, a copy of a document starting with "[Title of the document] Scope of claims" and a copy of a document starting with "[Title of the document] Description" [**hereinafter these copies are collectively referred to as the "Corrected Description"**], which were attached to said written request for correction, are attached at the end of this judgment) with respect to each group of the claims (**hereinafter referred to as the "Correction"**; including correcting Claim 13 as described later [hereinafter referred to as the [**Correction Concerning the Invention] in some cases**]).

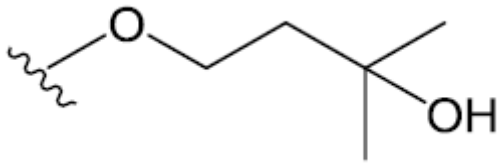
On July 25, 2014, the JPO rendered a decision to the effect that "The correction shall be accepted as requested. The request for a trial in question shall be dismissed" (Exhibit Ko 28).

B. The defendants filed a request for a trial for patent invalidation (Invalidation Trial No. 2013-800222) to seek the invalidation of the Patent for the Inventions Pertaining to Claims 1, 2, 4, 6 to 14, 16, and 18 to 30 of the Patent (Exhibit Otsu 17).

On April 30 2014, Columbia University and the plaintiff submitted a written request for correction dated the same (Exhibit Ko 25) to correct the "description and scope of claims" of the Patent as described in the "corrected description and scope of claims" (the "description and scope of claims" and "corrected description and scope of claims" are understood as being erroneous descriptions, and they should be the "description" and "corrected description," respectively, in the same manner as in the written request for correction dated September 25, 2013) with respect to each group of the claims (the content of the correction is the same as that of the Correction [Exhibits Ko 15 and 25]).

The JPO indicated its provisional opinion that it accepts the Correction Concerning the Invention in a written notice of examined matters dated August 1, 2014 (Exhibit Ko 29), which was given prior to the oral proceedings on September 24 of the same year.

C. The Correction Concerning the Invention is considered to be intended to limit the objective substance and the starting material and to limit a side chain to be introduced to one having the following structure (**hereinafter referred to as a "Maxacalcitol Side Chain "**).

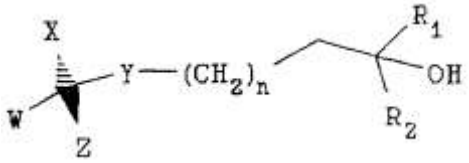


The Correction Concerning the Invention is made within the scope of the matters described in the Description for the purpose of the restriction of the scope of claims, and it does not substantially enlarge or alter the scope of claims (the defendants also do not dispute this point). The Defendant's Process does not fall under the part that was excluded from the Invention through the Correction (the parties also do not dispute this point). Therefore, it is only necessary to consider whether the Defendant's Process falls under the technical scope of the Invention as an equivalent thereto and whether the Patent for the Invention is recognized as one that should be invalidated by a trial for patent invalidation, in relation to the invention after the Correction.

(6) Corrected invention

The statement of Claim 13 after the Correction is as in [Claim 13] in the scope of claims of the Corrected Description attached to this judgment, and the invention pertaining to said claim (**hereinafter referred to as the "Corrected Invention"**) is segmented into the following constituent features (underlined parts are corrected parts; **Constituent Features [A-1] and [A-2'] to [A-6'] are collectively referred to as "Constituent Feature [A']"**).

[A-1] A process for preparing a compound having the following structure:

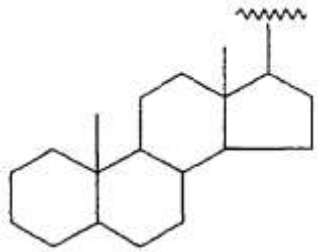


[A-2'] (in the formula, n is 1;

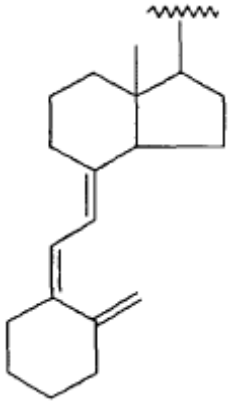
[A-3'] R_1 and R_2 are methyl;

[A-4'] each of W and X is independently hydrogen or methyl;

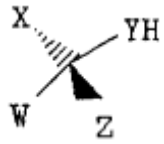
[A-5'] Y is O; and
[A-6'] Z is
a steroid ring structure of the formula:



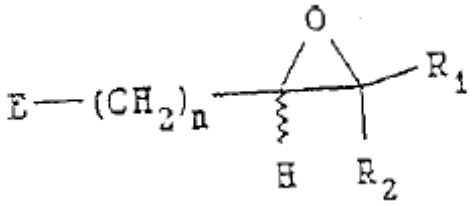
or a vitamin D structure of the formula:



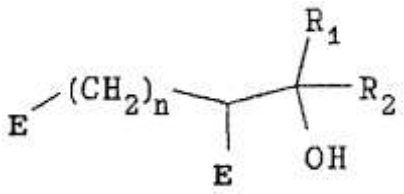
wherein each of the structures of Z may optionally have one or more protected or unprotected substituents and/or one or more protective groups, and wherein any ring of the structure of Z may optionally have one or more unsaturated bonds);
[E] which comprises:
[B-1] [a] the step of reacting a compound having the following structure:



(in the formula, W, X, Y and Z are as defined above)
[B-2] in the presence of a base, with a compound having the following structure:

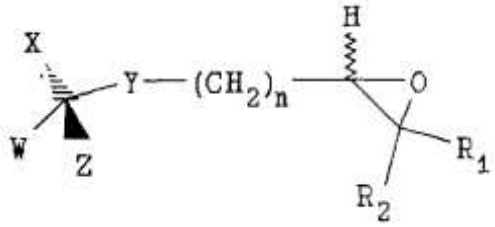


or



(in the formula, n, R_1, and R_2 are as defined above, and E is an eliminating group)

[B-3] to produce an epoxide compound having the following structure:



[C] [b] the step of treating the epoxide compound with a reducing agent to produce the compound; and

[D] [c] the step of recovering the compound so produced.

(7) Defendants' act

A. On August 15, 2012, Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma obtained the approval of the Minister of Health, Labour and Welfare in relation to the preparation and sale of Defendants' Products 2(1) to (3), respectively. These products were listed in the National Health Insurance Drug Price Standard on December 14 of the same year.

B. Defendant DKSH imports Defendant's Product 1, which was prepared by Cerbios, a Swiss drug manufacturer, by the Defendant's Process, as a business and sells it at least to Defendant Takata Pharmaceutical and Defendant Pola Pharma.

Any maxacalcitol that is contained in Defendants' Products 2 (including Defendant's Product 2(1) sold by Defendant Iwaki Seiyaku) as an active pharmaceutical ingredient (active ingredient) was prepared by the Defendant's Process.

C. The Defendant's Process fulfills Constituent Features [A], [B-2], and [D] of the Invention (Constituent Feature [A'], [B-2], and [D] of the Corrected Invention).

The Defendant's Process does not fulfill Constituent Feature [B-1] in that, in Starting Material A in Step I, "Z" in Constituent Feature [A-6] cited in Constituent Feature [B-1] (Constituent Feature [A-6'] of the Corrected Invention) does not have a structure that has two protected substituents (cis (5Z) secosteroid structure) among "vitamin D structures" that "have one or more protected … substituents," but has a trans (5E) secosteroid structure, which is a geometoric isomer of said cis (5Z) secosteroid structure.

In addition, the Defendant's Process does not fulfill Constituent Features [B-3] and [C] in that Intermediate C in Steps I and II does not have a cis (5Z) secosteroid structure but has a trans (5E) secosteroid structure.

3. Issues

The issues of this case are [i] whether the Defendant's Process falls under the technical scope of the Invention (Corrected Invention) as an equivalent thereto (fulfillment of the requirements mentioned in (1) to (5) below), [ii] whether the Patent for the Invention (Corrected Invention) is recognized as one that should be invalidated by a trial for patent invalidation (existence or absence of the grounds for invalidation mentioned in (6) to (10) below), and [iii] whether an injunction is necessary (as mentioned in (11) below) if issue [i] above is affirmed and[but] issue [ii] above is denied.

Incidentally, as mentioned in No.2(5)C. above, the Correction Concerning the Invention is recognized as being made within the scope of the matters described in the Description for the purpose of the restriction of the scope of claims and as not substantially enlarging or altering the scope of claims. Therefore, it is only necessary to consider issues [i] and [ii] above ((1) to (10) below) in relation to the Corrected Invention. (Therefore, the allegations of the parties concerning the Corrected Invention are briefly indicated in No. 3 below.)

(1) First requirement of the doctrine of equivalents (Issue 1)

(2) Second requirement of the doctrine of equivalents (Issue 2)

(3) Third requirement of the doctrine of equivalents (Issue 3)

(4) Fourth requirement of the doctrine of equivalents (Issue 4)

(5) Fifth requirement of the doctrine of equivalents (Issue 5)

(6) Ground for Invalidation 1 (lack of an inventive step by citing Exhibit Otsu 9 as the primarily cited document) (Issue 6)

(7) Ground for Invalidation 2 (lack of an inventive step by citing Exhibit Otsu 4-2 as the primarily cited document) (Issue 7)

(8) Ground for Invalidation 4 (lack of an inventive step by citing Exhibit Otsu 14 as the primarily cited document) (Issue 8)
(9) Ground for Invalidation 5 (violation of the enablement requirement) (Issue 9)
(10) Ground for Invalidation 6 (violation of the support requirements) (Issue 10)
(11) Necessity of an injunction (Issue 11)
No. 3 Allegations of the parties concerning the issues
1. Regarding Issue 1 (first requirement of the doctrine of equivalents)
(Plaintiff's allegation)

Compared with publicly known art, the Corrected Invention is characterized by the process for introducing a Maxacalcitol Side Chain, which is described in Constituent Features [B] and [C]. The point that the starting material is a cis form in the case of a compound having a vitamin D structure is not associated with the aforementioned side chain introduction reaction, and it is thus not a characteristic part of the Corrected Invention. Therefore, whether the starting material is a cis form or a trans form, that is, a difference between the Corrected Invention and the Defendant's Process, is not the essential part of the Corrected Invention.

(Defendants' allegation)

The point that "Z" in Constituent Feature [A-6'] cited in Constituent Feature [B-1] is a "cis form" in the case where it has a vitamin D structure is the essential part of the Corrected Invention. The Defendant's Process wherein said "Z" is a "trans form" does not fulfill the first requirement of the doctrine of equivalents.

That is, as of the Priority Date, it was widely known that a compound having a structure similar to that of maxacalcitol can be obtained by using a "trans" vitamin D derivative as the starting material and by converting said material from a "trans form" to a "cis form" through alkylation thereof with a side chain building block under the basic condition. The essential part of the Corrected Invention naturally differs between the case of using a compound having a steroid ring structure as the starting material and the case of using a compound having a vitamin D structure as the starting material. In light of the purpose of the Corrected Invention, i.e., shortening of the preparation process, it should be considered as an essential part of the Corrected Invention to choose a "cis form" as the starting material in the case of using a compound having a vitamin D structure as the starting material to eliminate the necessity of conversion from a "trans form" to a "cis form" and reduce one step in said process because the final objective substance, maxacalcitol, is a "cis form."

2. Regarding Issue 2 (second requirement of the doctrine of equivalents)
(Plaintiff's allegation)

(1) The second requirement of the doctrine of equivalents relates to a determination concerning whether the subject product, etc. is substantially identical with a patented invention in objective terms. As the Corrected Invention is characterized by the process for introducing a Maxacalcitol Side Chain, even if a cis form of the starting material is substituted by a trans form thereof, the Corrected Invention is not evaluated as a technically different invention. Therefore, the Defendant's Process is substantially identical with the process of the Corrected Invention. The defendants enjoy the function and effect of the Corrected Invention, i.e. improvement of the yield of side chain introduction reaction and reduction of the number of steps in the process for forming the structure of a Maxacalcitol Side Chain thereafter, by carrying out the Defendant's Process.

(2) The reaction of the Corrected Invention is a two-step reaction consisting of a step of preparing an epoxy compound intermediate through reaction between the starting material and a specific reagent (Constituent Feature [B-2]; one that corresponds to the Defendant's Process is 4-bromo-2,3-epoxy-2-methylbutane; **hereinafter referred to as the "Reagent"**) and a step of opening the epoxy ring of said intermediate. In the ordinary process, a purified reaction intermediate is obtained by carrying out a post-processing step and a purification process after the reaction in the first step, and the objective substance is then obtained by providing said purified reaction intermediate for the reaction in the second step. On the other hand, in one-pot reaction, the second reaction step is carried out after the completion of the first reaction step without carrying out post-processing and purification by adding a reducing agent into the same container. One-pot reaction is not described as a constituent feature of the Corrected Invention, but is one of the embodiments thereof (that is, the reaction of the Corrected Invention can be provoked as one-pot reaction, and it is also possible to carry out the two reaction steps separately). However, this is part of the function and effect of the Corrected Invention in the sense that the chemical reaction prescribed in the constituent features of the Corrected Invention has conditions that enable one-pot reaction.

The function and effect of the Corrected Invention and those of the Defendant's Process are recognized as being identical with each other, irrespective of whether one-pot reaction is carried out in the Defendant's Process. If one-pot reaction is carried out in the Defendant's Process, the Defendant's Process is considered to enjoy the effect of the Corrected Invention to the maximum extent.

(Defendants' allegation)

(1) The Corrected Description states that shortening of the process and improvement of yield thereby are the purposes of the Corrected Invention. In the Defendant's Process

wherein the starting material is a trans form, Step III is indispensable. Therefore, the number of steps in the Defendant's Process is more than that in the Corrected Invention wherein the starting material is a cis form. In addition, as a result, the yield is inevitably lower in the case of using the Defendant's Process than in case of working the Corrected Invention (Exhibit Otsu 12). Consequently, the Defendant's Process does not produce the effect of the Corrected Invention, i.e., shortening of the preparation process.

(2) The effect obtained by one-pot reaction is not based on the structure of the Corrected Invention. Therefore, the plaintiff's allegation concerning this point is unreasonable.

3. Regarding Issue 3 (third requirement of the doctrine of equivalents)

(Plaintiff's allegation)

It has been known that even if a two-step reaction consisting of a step of preparing an epoxy compound intermediate through reaction with the Reagent and a step of opening the epoxy ring of said intermediate is carried out by using not a cis-form starting material but a trans-form starting material in the Defendant's Process, a prepared trans-form compound can be efficiently converted into a cis-form of maxacalcitol, which is the objective substance (Exhibit Ko 14). Therefore, substitution of the starting material in the Defendant's Process was easy either based on the time when the Defendants' Products were prepared or based on the Priority Date. Even if it is generally not easy to predict a reaction in the chemical field, it is as easy to predict a reaction wherein the cis-form starting material in the Corrected Invention is substituted with a trans-form starting material as to predict the result obtained by substituting a part of a device.

(Defendants' allegation)

The fact that a person ordinarily skilled in the art could easily introduce a side chain into a trans-form starting material as appropriate as of the Priority Date does not mean the fulfillment of the third requirement of the doctrine of equivalents. The third requirement of the doctrine of equivalents requires not the easiness of working a different technology but the easiness of realizing the relevant invention through substitution. Differently from substituting a part of an invention of a device, if a cis-form starting material is substituted with a trans-form starting material in the Corrected Invention, it is first unclear whether a side chain can be introduced in the same manner as in the case of using the cis-form starting material, even with the trans-form starting material whose physicality and chemical property differ from those of the cis-form starting material. In addition, the yield in such case is also unclear. Moreover, photoisomerization reaction is necessary to eventually obtain a cis form of maxacalcitol. Therefore, even a person ordinarily skilled in the art can never "easily"

conceive of whether a "high yield" as alleged by the plaintiff can be realized by substituting the cis-form starting material with the trans-form starting material.

4. Regarding Issue 4 (fourth requirement of the doctrine of equivalents)

(Defendants' allegation)

As of the Priority Date, the situation was as follows: [i] maxacalcitol was a publicly known substance; [ii] a process for preparing a cis-form objective substance through photoisomerization reaction by introducing a side chain similar to a Maxacalcitol Side Chain into the starting material in the Defendant's Process, that is, a trans form of vitamin D derivative, had been known (Exhibit Otsu 4-2); [iii] a process for introducing a side chain whose number of carbon atoms is 4 to 12 (a Maxacalcitol Side Chain falls under the cases where the number of carbon atoms is 5) into a starting material whose structure is similar to that of the aforementioned starting material through alkylation had been known (Exhibit Otsu 3-2); [iv] a process for introducing a Maxacalcitol Side Chain by introducing a side chain with an epoxy ring into an alcohol compound with the use of the Reagent and opening the epoxy ring with a reducing agent had been known (Exhibit Otsu 9); [v] it had been known that a side chain similar to a Maxacalcitol Side Chain can be introduced into a steroid derivative efficiently by using a "4-bromo-2-methyl-2-butane" derivative that is similar to the Reagent (Exhibit Otsu 14); and [vi] it had been well-known that a glycidyl ether compound is synthesized or an epoxy ring is opened in an intended direction by having a compound with an epoxy ring react with alcohol on the occasion of alkylation (Exhibits Otsu 6 to 8, 10, and 11). According to these facts, it should be said that as of the Priority Date, a person ordinarily skilled in the art could have easily presumptively conceived of obtaining maxacalcitol by using a trans form of vitamin D derivative in the Defendant's Process as the starting material, introducing a side chain with an epoxy ring to the starting material with the use of the Reagent, opening the epoxy ring of the introduced side chain with a reducing agent to obtain a compound into which a Maxacalcitol Side Chain was introduced, and then photoisomerizing the obtained compound (Defendant's Process). Therefore, the fourth requirement of the doctrine of equivalents is not fulfilled.

(Plaintiff's allegation)

A trans-form starting material is described in Exhibit Otsu 4-2. However, all the side chains that are introduced with a reagent which is reacted with said starting material are longer than a Maxacalcitol Side Chain, and a Maxacalcitol Side Chain is not disclosed. Even if a person tries to directly introduce a Maxacalcitol Side Chain, reaction does not advance (Exhibit Ko 13). A process for preparing glycidyl ether is described in Exhibits Otsu 6 to 8, but a compound prepared by opening an epoxy ring of a glycidyl ether

compound obtained through application of said process to the starting material has a side chain that differs from a Maxacalcitol Side Chain. In addition, Exhibit Otsu 3-2 only discloses a process that requires a mercury-containing reagent as a process for introducing a Maxacalcitol Side Chain. Therefore, the Defendant's Process could not have been easily presumptively conceived of by a person ordinarily skilled in the art based on publicly known art as alleged by the defendants.

5. Regarding Issue 5 (fifth requirement of the doctrine of equivalents)

(Defendants' allegation)

The fifth requirement of the doctrine of equivalents includes not only limitations during an examination process but also intentional limitations on the content of an invention based on the structure of the description. According to the content described in the Corrected Description and documents cited therein, there is no other choice but to understand that in the case of using a compound having a vitamin D structure as the starting material, the Corrected Invention intentionally limits the starting material to a cis-form compound.

(Plaintiff's allegation)

Even if a synthesis route of a vitamin D_3 derivative containing a trans-form compound is academically well-known, it is natural to use a cis-form starting material in a process for synthesizing a cis-form objective substance in an invention of a process for preparing a medicine. It is thus not at all unreasonable that the Corrected Invention describes a cis-form vitamin D structure that is natural as a starting material in a process for preparing a cis form of maxacalcitol but does not describe a trans-form vitamin D structure that is unnatural as such starting material. Therefore, the fact that the plaintiff described only a cis-form vitamin D structure in the scope of claims while citing documents that describe a trans-form compound (Exhibits Otsu 3-1 and 4-1) in the explanation about the starting material in the detailed explanation of the invention in the Corrected Description does not fall under a "special circumstance" that is the fifth requirement of the doctrine of equivalents.

6. Regarding Issue 6 (Ground for Invalidation 1: lack of an inventive step by citing Exhibit Otsu 9 as the primarily cited document)

(Defendants' allegation)

(1) Exhibit Otsu 9 describes a process for introducing a Maxacalcitol Side Chain by introducing a side chain with an epoxy ring into an alcohol compound with the use of "1-bromo (or chloro)-3-methyl-2,3-epoxybutane" that corresponds to a reagent specified by Constituent Feature [B-2] of the Corrected Invention and by opening the epoxy ring

with a reducing agent (**hereinafter the invention described in Exhibit Otsu 9 is referred to as "Exhibit Otsu 9 Invention"**).

Comparing the Corrected Invention and Exhibit Otsu 9 Invention, they differ in the following point but are identical with each other in all the other points.

The starting material and objective substance of Exhibit Otsu 9 Invention do not have a structure (steroid structure or vitamin D structure) specified by "Z" of Constituent Feature [A-6'] cited in Constituent Feature [B-1] of the Corrected Invention. On the other hand, the starting material and objective substance of the Corrected Invention have said structure (Constituent Features [A-1], [A-6'], [B-1], and [B-3]).

(2) As indicated in Exhibit Otsu 14, a process for efficiently introducing a side chain similar to a Maxacalcitol Side Chain into a steroid derivative by using a "4-bromo-2-methyl-2-butane" derivative that is similar to the aforementioned reagent had been well-known. In addition, as indicated in Exhibits Otsu 3-2 and 4-2, a process for introducing a Maxacalcitol Side Chain into a vitamin D derivative by using said derivative as the starting material had also been well-known.

Therefore, based on Exhibit Otsu 9 Invention and the aforementioned technical matter, a person ordinarily skilled in the art could have easily conceived of a process for obtaining a compound by introducing a Maxacalcitol Side Chain into the OH group of the starting material having a structure specified by "Z" of Constituent Feature [A-6'] that is cited in Constituent Feature [B-1] of the Corrected Invention through application of a reagent used in Exhibit Otsu 9 Invention to said starting material. There is also no prominent effect.

(Plaintiff's allegation)

(1) The Corrected Invention and Exhibit Otsu 9 Invention differ in the following points (out of the constituent features of the Corrected Invention, structures that are not important in determining novelty and involvement of an inventive step are not taken up as differences; the same applies hereinafter).

(Difference 1) In the Corrected Invention, "Z" of Constituent Feature [A-6'] that is cited in Constituent Feature [B-1] of the Corrected Invention has a "steroid ring structure or a cis-form vitamin D structure," while it is "methyl" in Exhibit Otsu 9 Invention.

(Difference 2) The Corrected Invention includes "[b] the step of preparing maxacalcitol by treating the epoxide compound with a reducing agent," while Exhibit Otsu 9 Invention does not include such a step (an epoxy ring opening reaction is described in Exhibit Otsu 9, but the "epoxide compound" therein differs from that in the Corrected Invention).

(Difference 3) In the Corrected Invention, the objective substance is maxacalcitol, while there is no statement to that effect in Exhibit Otsu 9.

(2) The Corrected Invention and Exhibit Otsu 9 Invention totally differ in the starting material, which is the reaction partner, though the same reagent is used for reaction in both inventions (the low molecular weight alcohol of Exhibit Otsu 9 Invention significantly differs from the starting material of the Corrected Invention). Therefore, it is impossible to predict reactivity between the OH group at position 22 of the starting material of the Corrected Invention and said reagent. In particular, it is completely unpredictable that the Corrected Invention can achieve a good yield and develop one-pot reaction.

In the first place, Exhibit 9 only describes the reagent (reaction with low molecular weight alcohol) and does not suggest at all the use of the reagent for introducing a Maxacalcitol Side Chain by having it react with the starting material of the Corrected Invention.

The defendants cite Exhibits Otsu 14, 3-2, and 4-2. However, Exhibit Otsu 14 is a document concerning introduction of a side chain that is different from a Maxacalcitol Side Chain by using a reagent that is different from the Reagent. Exhibit Otsu 3-2 describes the introduction of a Maxacalcitol Side Chain that is accompanied by the reaction of a prenyl bromide reagent and the use of a mercury compound, but does not describe the yield. Therefore, it does not particularly disclose the reactivity of said reagent. Exhibit Otsu 4-2 describes the direct introduction of a side chain that is longer than a Maxacalcitol Side Chain, but it is a document suggesting that a Maxacalcitol Side Chain cannot be directly introduced.

(3) The Corrected Invention has a prominent effect of being able to develop one-pot reaction in a good yield.

7. Regarding Issue 7 (Ground for Invalidation 2: lack of an inventive step by citing Exhibit Otsu 4-2 as the primarily cited document)

(Defendants' allegation)

(1) A process for preparing a substance similar to maxacalcitol by using a vitamin D derivative having a trans structure as the starting material is disclosed in steps [c] and [d] in Claim 5 of Exhibit Otsu 4-2 (**hereinafter the invention described in Exhibit Otsu 4-2 is referred to as "Exhibit Otsu 4 Invention"**).

The Corrected Invention and Exhibit Otsu 4 Invention differ in the following points but are identical with each other in all the other points.

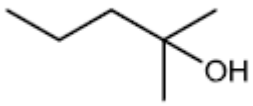
(Difference 1) In the Corrected Invention, a side chain containing an epoxy ring is introduced by using a specific reagent containing an epoxy ring. On the other hand, in

Exhibit Otsu 4 Invention, a side chain is introduced by using a reagent that is different from said reagent, and a step of opening the epoxy ring by treating it with a reducing agent is not disclosed.
(Difference 2) In the Corrected Invention, a cis-form starting material is used, while a trans-form starting material is used in Exhibit Otsu 4 Invention.
(2) According to Exhibit Otsu 9, a person ordinarily skilled in the art can easily conceive of Difference 1.

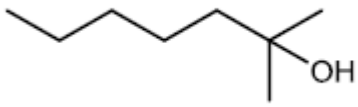
In addition, as the plaintiff alleges that a cis form and a trans form can be easily substituted with each other, a person ordinarily skilled in the art can also easily conceive of Difference 2.

Therefore, the Corrected Invention can be easily conceived of by a person ordinarily skilled in the art based on Exhibit Otsu 4 Invention and the aforementioned technical matter, and it does not have any prominent effect.
(Plaintiff's allegation)
(1) The Corrected Invention and Exhibit Otsu 4 Invention differ in the following points.
(Difference 1) Regarding a compound having the following structure, which is the objective substance:

in the Corrected Invention, "A'" has the following structure:



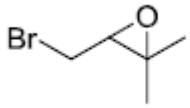
on the other hand, in Exhibit Otsu 4 Invention, "A'," even one that is the closest to that in the Corrected Invention, has the following structure:



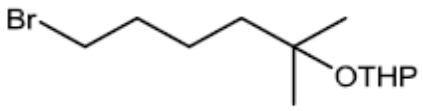
(incidentally, if "Z" of Constituent Feature [A-6'] of the Corrected Invention has a vitamin D structure, it is of a cis form; on the other hand, in Exhibit Otsu 4 Invention, it is of a trans-form vitamin D structure; however, whether the vitamin D structure of the

starting material is a cis form or a trans form does not matter in the Corrected Invention; therefore, the plaintiff does not consider the structure of "Z" as a difference).

(Difference 2) In the Corrected Invention, Compound "E-B" (used as a reagent) (in the formula, E is an elimination group) has the following structure:

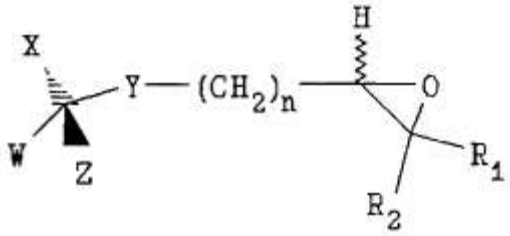


on the other hand, in Exhibit Otsu 4 Invention, Compound "E-B," even one that is the closest to that in the Corrected Invention, has the following structure:



THP = tetrahydropyran.

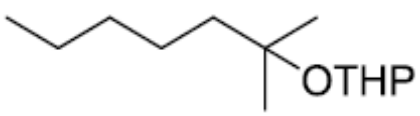
(Difference 3) The Corrected Invention comprises the step of producing an epoxide compound having the following structure:



n=1, R_1 and R_2= methyl

on the other hand, in Exhibit Otsu 4 Invention, a side chain structure is directly introduced, and "A'" having the following structure is one that is the closest to that in the Corrected Invention:

, and the following structure:



is produced.

(Difference 4) The Corrected Invention comprises "[b] the step of treating the epoxide compound with a reducing agent to produce the compound." On the other hand, Exhibit Otsu 4 Invention does not comprise a reduction step corresponding thereto (direct introduction of a side chain structure).

(2) Exhibit Otsu 4-2 describes the direct introduction of a side chain that is longer than a Maxacalcitol Side Chain, but does not suggest the objective of the introduction of a Maxacalcitol Side Chain.

(3) The Corrected Invention has a prominent effect of being able to develop one-pot reaction in a good yield.

8. Regarding Issue 8 (Ground for Invalidation 4: lack of an inventive step by citing Exhibit Otsu 14 as the primarily cited document) (incidentally, Ground for Invalidation 3 is a vacant number)

(Defendants' allegation)

(1) Exhibit Otsu 14 discloses that [i] a "4-bromo-2-methyl-2-butane" derivative is a reagent that alkylates the OH group at position 22 of a side chain of a compound having a steroid ring structure in a good yield and that [ii] it opens the introduced epoxy ring by its oxidization in a good yield (**hereinafter the invention described in Exhibit Otsu 14 is referred to as "Exhibit Otsu 14 Invention"**).

The Corrected Invention and Exhibit Otsu 14 Invention differ in the following points and are identical with each other in all the other points.

(Difference 1) Exhibit Otsu 14 Invention uses a reagent which is a "4-bromo-2-methyl-2-butane" derivative. On the other hand, the Corrected Invention uses a "4-bromo-2,3-epoxy-2-methylbutane" as a reagent.

(Difference 2) In Exhibit Otsu 14 Invention, the introduced side chain has a structure similar to that of a Maxacalcitol Side Chain. On the other hand, the side chain introduced in the Corrected Invention is a side chain that is identical with a Maxacalcitol Side Chain.

(2) Exhibit Otsu 9 reports that "4-bromo-2,3-epoxy-2-methylbutane" (the Reagent) reacts with 10 kinds of alcohols that have different structures. A person ordinarily skilled in the art can naturally understand that the relevant reaction is applicable to other substances that have a similar structure. If a person ordinarily skilled in the art knows from Exhibit Otsu 14 that a side chain can be introduced into the OH group at position 22 of a starting material having a steroid ring structure in a good yield by using the reagent pertaining to Exhibit Otsu 14 Invention, he/she can easily conceive of applying the Reagent described in Exhibit Otsu 9 to starting materials having a vitamin D structure or a steroid ring structure in substitution for the reagent pertaining to Exhibit

Otsu 14 Invention. Then, as the side chain introduced in Exhibit Otsu 9 is a Maxacalcitol Side Chain, a person ordinarily skilled in the art can easily conceive of introducing a Maxacalcitol Side Chain into the OH group at position 22 of a compound having a steroid ring structure based on Exhibit Otsu 9.

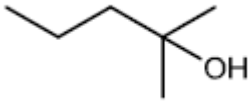
Therefore, the Corrected Invention is one that a person ordinarily skilled in the art can easily conceive of based on Exhibit Otsu 14 Invention and the aforementioned technical matter, and it does not have any prominent effect.

(Plaintiff's allegation)

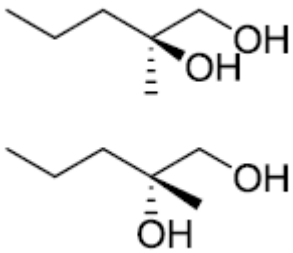
(1) The Corrected Invention and Exhibit Otsu 14 Invention differ in the following points.

(Difference 1) Regarding a compound having the following structure, which is the objective substance:

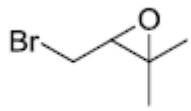
in the Corrected Invention, "A'" has the following structure (Constituent Features [A-1] and [A-3']):



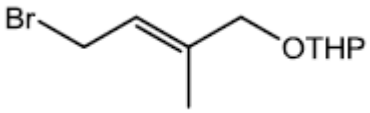
on the other hand, in Exhibit Otsu 14, "A'" has the following structure:



(Difference 2) In the Corrected Invention, Compound "E-B" (used as a reagent) has the following structure (Constituent Feature [B-2]):

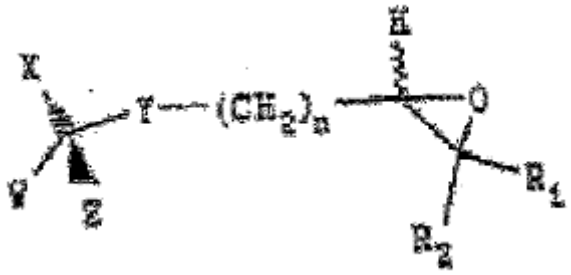


on the other hand, in Exhibit Otsu 14, Compound "E-B" has the following structure:



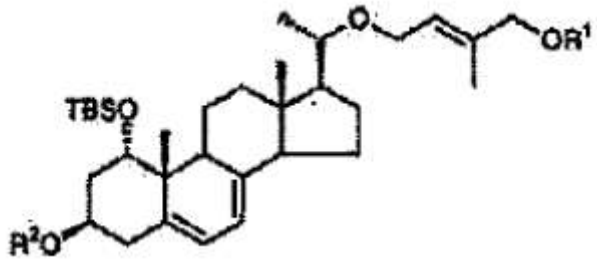
THP = tetrahydropyran

(Difference 3) The Corrected Invention comprises the step of producing an epoxide compound having the following structure through reaction between the starting material and Compound "E-B":

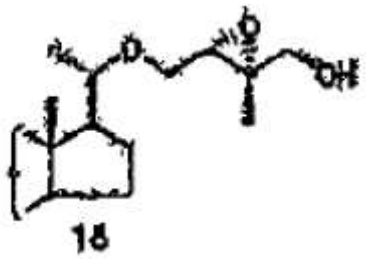


n=1, R_1 and R_2= methyl

on the other hand, in Exhibit Otsu 14, a compound having the following structure is produced through reaction between the starting material and Compound "E-B":



and then, an epoxy compound having the following structure is produced by using the Katsuki-*Sharpless reaction*:



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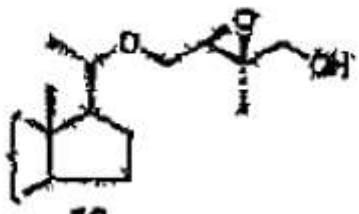

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(2) Neither Exhibit Otsu 14 nor Exhibit Otsu 9 describes the introduction of a Maxacalcitol Side Chain. Therefore, it is hardly possible to elicit the logic that the Corrected Invention can be easily conceived of by a person ordinarily skilled in the art based on Exhibits Otsu 14 and 9.

(3) The Corrected Invention has a prominent effect of being able to develop one-pot reaction in a good yield.

9. Regarding Issue 9 (Ground for Invalidation 5: violation of the enablement requirement)

(Defendants' allegation)

The detailed explanation of the invention in the Corrected Description indicates the specific details of an alkylation reaction using the Reagent and the yield thereof only in relation to the case where the objective substance and the starting material have a steroid ring structure, and it includes no specific statement about the case where they have a vitamin D structure. Therefore, it is impossible to predict whether the same reaction as that in the former case occurs in the latter case, and if it does, what the extent of the effect of the reaction is. An excessive trial and error process is thus necessary. The detailed explanation of the invention in the Corrected Description includes no statement that makes it possible for a person ordinarily skilled in the art to work the Corrected Invention in the case where the objective substance and the starting material have a vitamin D structure.

(Plaintiff's allegation)

The Corrected Description states, as Reaction Diagram B, a reaction that corresponds to the Corrected Invention, which comprises Step [1] wherein the starting

material and a reagent are reacted in the presence of a base and Step [2] which is a reaction to open the epoxy ring of the epoxy compound obtained in Step [1] by using a reducing agent. The Corrected Description states that Step [1] can be implemented in the same manner as the process of Reaction Diagram A. The Corrected Description explains that both a compound having a steroid structure and a compound having a vitamin D structure can be used as the starting material, and describes favorable reaction conditions for the reaction of Reaction Diagram A with no distinction between a steroid structure and a non-steroid structure. Moreover, it also describes favorable reaction conditions for Step [2] with no distinction between a steroid structure and a non-steroid structure. Therefore, a person ordinarily skilled in the art can easily recognize that the Corrected Invention can be worked by applying the reaction conditions described in the Corrected Description in both of the cases where the objective substance and the starting material have a steroid structure and the cases where they have a vitamin D structure.

10. Regarding Issue 10 (Ground for Invalidation 6: violation of the support requirements)

(Defendants' allegation)

As mentioned in 9. above, the statement in the detailed explanation of the invention in the Corrected Description, which specifically discloses only a reaction using a compound having a steroid ring structure as the starting material, cannot be generalized to the cases where a compound having a vitamin D (secosteroid) structure is used as the starting material. In addition, regarding the Reagent used for alkylation, 4-bromo-2,3-epoxy-2-methylbutane is the only reagent whose effect has been confirmed by a working example, etc. in the Corrected Description. It is also unclear whether other reagents included in the reagents of the Corrected Invention react in the same manner as 4-bromo-2,3-epoxy-2-methylbutane.

Therefore, the Corrected Invention includes the inventions that are not stated in the detailed explanation of the invention in the Corrected Description.

(Plaintiff's allegation)

Reaction of a starting material having a vitamin D structure in the Corrected Invention is also clearly and sufficiently stated in the detailed explanation of the invention in the Corrected Description.

11. Regarding Issue 11 (necessity of an injunction)

(Plaintiff's allegation)

The Defendant's Process falls under the technical scope of the Corrected Invention as an equivalent thereto. Therefore, both Defendant DKSH's act of importing and

assigning Defendant's Product 1, which is an article produced by the Defendant's Process, as a business and the act of Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma of assigning or offering for assignment Defendants' Products 2 which contain maxacalcitol prepared by the Defendant's Process as an active pharmaceutical ingredient (active ingredient) constitute infringement of the plaintiff's ownership interest pertaining to the Patent Right.

Consequently, the plaintiff holds the right to seek an injunction against the assignment, etc. of the Defendants' Products (Article 100, paragraph (1) of the Patent Act) and the right to seek disposal of the Defendants' Products (paragraph (2) of said Article) against the defendants.

(Defendants' allegation)

The defendants dispute this issue.

No. 4 Court decision

1. Regarding Issue 1 (first requirement of the doctrine of equivalents)

(1) The parties agree on the following points: the Defendant's Process fulfills Constituent Features [A'], [B-2], and [D] of the Corrected Invention; and the Defendant's Process does not literally fulfill Constituent Features [B-1], [B-3], and [C] of the Corrected Invention in that Starting Material A and Intermediate C in the Defendant's Process are not cis-form compounds having a vitamin D structure but are trans-form compounds having a vitamin D structure that are the geometric isomers of said cis-form compounds.

Even if the structure stated in the scope of claims partially differs from the product manufactured, etc. or process used by the other party (**hereinafter referred to as a "Subject Product, etc."**), the Subject Product, etc. falls under the technical scope of the relevant patented invention as an equivalent to the structure stated in the scope of claims if there are the following circumstances (see the judgment of the Third Petty Bench of the Supreme Court of February 24, 1998, Minshu, Vol. 52, No. 1, at 113 [Ball Spline case]): [i] the different part is not the essential part of the patented invention (first requirement); [ii] the purpose of the patented invention can be achieved and the same function and effect can be produced even if said part is substituted with a corresponding part of the Subject Product, etc. (second requirement); [iii] a person ordinarily skilled in the art to which the invention belongs (a person ordinarily skilled in the art) could have easily conceived of the aforementioned substitution as of the time when the Subject Product, etc. was manufactured, etc. (third requirement); [iv] the Subject Product, etc. is neither identical with publicly known art as of the filing of the patent application for the patented invention nor could have been easily presumptively

conceived of by a person ordinarily skilled in the art based on said publicly known art as of said filing date (fourth requirement); and [v] there are no special circumstances such as where the Subject Product, etc. falls under those that were intentionally excluded from the scope of claims in the patent application procedures for the patented invention (fifth requirement).

Therefore, fulfillment of the requirements of the doctrine of equivalents is determined below in order of precedence to determine whether the Defendant's Process using trans-form compounds having a vitamin D structure as the starting material and the intermediate can be considered to be equivalent to the cases where cis-form compounds having a vitamin D structure are used as such in the Corrected Invention.

(2) The substantial value of an invention which the Patent Act intends to protect exists in the disclosure, with a specific structure, to society of a means for solving a technical problem that could not have been solved by prior art, based on unique technical ideas that are not seen in prior art. Therefore, the characteristic part, which forms the core of the technical ideas that serve as a basis for the means for solution unique to the relevant patented invention in the structure stated in the scope of claims in the description, should be considered to be the essential part of the patented invention.

First of all, in the Corrected Invention, the case which the plaintiff compares with the Defendant's Process (the case where the objective substance is maxacalcitol and the Reagent is used) comprises the step of reacting the starting material (Constituent Feature [B-1]) and the Reagent in the presence of a base to produce an epoxide compound that is an intermediate (Constituent Feature [B-3]; **hereinafter referred to as the "Reaction in the First Step"**) and the step of treating the epoxide compound with a reducing agent (opening the epoxy ring) to obtain maxacalcitol (Constituent Feature [C]; **hereinafter referred to as the "Reaction in the Second Step"**).

In the Corrected Description (Exhibit Ko 15), there are no clear statements about the problem to be solved of the Corrected Invention or the purpose and effect of the Corrected Invention; there is only the following statement: "The process for preparing a compound having the following structure … is new … is useful for the synthesis of a vitamin D derivative that can have a broad range of physiological activities" (page 25 of the Corrected Description). Comprehensively taking into account the statements in the "Background of the invention" section (pages 15 to 16 of the Corrected Description) and the statements of working examples (pages 49 to 57 of the Corrected Description) in the Corrected Description, the Corrected Invention is recognized as producing the effect of shortening the process for producing the objective substances of the Corrected Invention, including maxacalcitol, compared to prior art. (Incidentally, the effect of

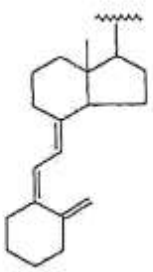
being able to develop one-pot reaction is nothing more than the effect achieved only in some of the embodiments of the Corrected Invention as indicated in the following statement in the Corrected Description: "The reaction in Step [2] can be implemented after Step [1], more specifically, after the material produced by the reaction in Step [1] is purified by an appropriate method, such as silica-gel chromatography, or can be implemented by adding a reducing agent directly to a mixture containing the material produced by the reaction in Step [1] without purifying said material; the process wherein Step [2] is implemented after Step [1] without purifying the produced material is called 'one-pot reaction,' and this process is favorable because it is operationally less redundant" [page 41 of the Corrected Description]; and it is not that one-pot reaction is always available if a process that fulfills the constituent features of the Corrected Invention is used; therefore, this effect cannot be recognized as the effect produced by the Corrected Invention; in addition, Working Examples 8 to 24 wherein the yield is not necessarily good are also stated as the working examples of the Corrected Invention; therefore, it is not that a good yield can always be achieved by using a process that fulfills the constituent features of the Corrected Invention; consequently, achievement of a good yield can also not be recognized as the effect produced by the Corrected Invention.)

It is reasonable to recognize that the important part which serves as a basis for the means for solving the problem that the Corrected Invention adopted to produce the process shortening effect (essential part of the Corrected Invention) exists in the introduction of an intended side chain (a Maxacalcitol Side Chain) by using the two-step reaction comprising the step of reacting the starting material having a vitamin D structure or a steroid ring structure with the reagent of Constituent Feature [B-2] (including the Reagent) in the presence of a base to produce an epoxide compound (Reaction in the First Step) and the step of treating said epoxide compound with a reducing agent (opening the epoxy ring) (Reaction in the Second Step) in order to obtain the objective substance having a vitamin D structure or a steroid ring structure.

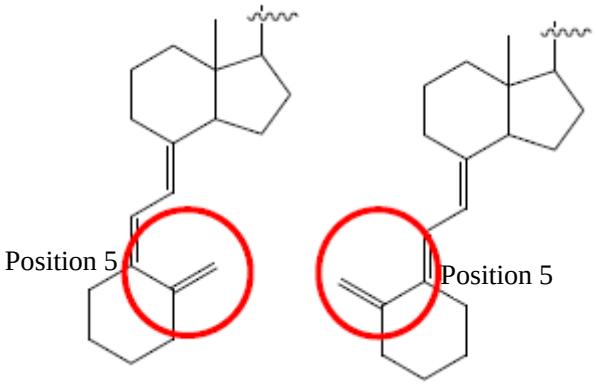
(3) The defendants allege as follows: If the starting material has a vitamin D structure, the Corrected Invention is characterized by a combination of the use of a cis-form starting material and the use of the reagent of Constituent Feature [B-2] (including the Reagent); in addition, the use of a cis-form starting material in itself is the essential part of the Corrected Invention.

The significance of a cis form and a trans form is as follows.

Vitamin D group shares the following structure, excluding side chains, as the basic skeleton thereof:



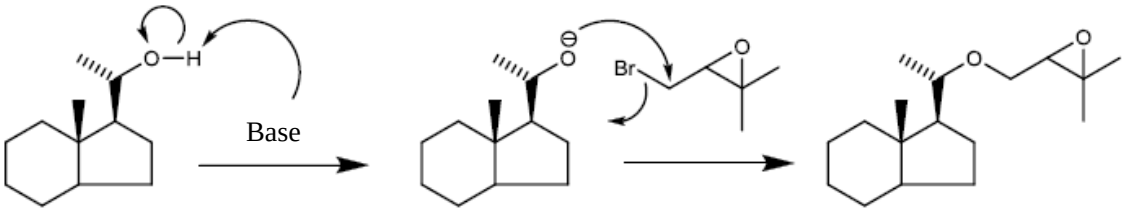
This basic skeleton includes three double bonds connected from the upper two rings, which are ordinarily called "triene." This "triene" cannot turn around a bond at a double bond part. Therefore, in vitamin D group, there are two geometric isomers derived from this triene structure, as indicated in the following drawings.



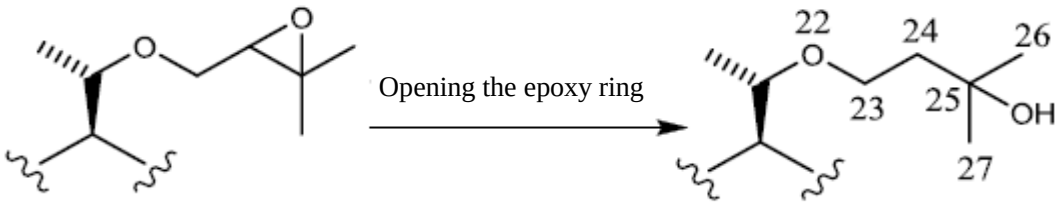
Cis form Trans form

A vitamin D having the left-hand triene sequence is called "cis form" (5Z) and a vitamin D having the right-hand triene sequence is called "trans form" (5E).

Whether the starting material having a vitamin D structure is a cis form or a trans form makes no difference in the Reaction in the First Step, that is, the reaction as indicated in the following drawings to synthesize an epoxide compound by reacting the OH group at position 22 of the starting material with the Reagent in the presence of a base:



and it also makes no difference in the Reaction in the Second Step, that is, the reaction as indicated in the following drawings to introduce a Maxacalcitol Side Chain by opening the epoxy ring:



The Defendant's Process has a commonality with the Corrected Invention in the important part of the means for solving the problem in that it uses the Reagent on the starting material having a vitamin D structure and also uses the two-step reaction comprising the Reaction in the First Step and the Reaction in the Second Step. Whether the starting material and the intermediate are a cis form or a trans form is not of essential importance in the means for solving the problem.

(4) On these bases, in the case where the objective substance has a vitamin D structure, whether the starting material and the intermediate are a cis form or a trans form should not be considered to be the essential part of the Corrected Invention.

Therefore, the Defendant's Process fulfills the first requirement of the doctrine of equivalents.

2. Regarding Issue 2 (second requirement of the doctrine of equivalents)

(1) As mentioned in 1.(2) above, the process for preparing maxacalcitol based on the Corrected Invention is recognized as producing a more process shortening effect than prior art.

(2) The Defendant's Process can achieve the purpose of the Corrected Invention, i.e. being able to shorten the process compared to prior art even if the starting material and the intermediate are substituted from cis forms to trans forms, and is recognized as producing the same function and effect as the Corrected Invention, in that it uses the Reagent on the starting material having a vitamin D structure and also uses the two-step reaction comprising the Reaction in the First Step and the Reaction in the Second Step.

(3) The defendants allege as follows: In the Defendant's Process wherein the starting material is a trans form, Step III wherein a trans-form substance D is converted to a cis form is indispensable; therefore, the number of steps in the Defendant's Process is more than that in the Corrected Invention wherein the starting material is a cis form; in

addition, as a result, the yield is inevitably lower in the case of using the Defendant's Process than in the case of working the Corrected Invention; consequently, the Defendant's Process does not produce the effect of the Corrected Invention, i.e., shortening of the preparation process.

However, even in consideration of the step of converting a trans form to a cis form in Step III of the Defendant's Process, the final number of steps is recognized as being smaller than that in conventional processes. Therefore, the Defendant's Process cannot be considered not to produce the same function and effect as the Corrected Invention.

Incidentally, the plaintiff alleges that the step of converting from a trans form to a cis form that does not correspond to any constituent feature of the Corrected Invention is not subject to consideration in determining the fulfillment of the second requirement of the doctrine of equivalents. However, comparing the Corrected Invention only with Steps I and II of the Defendant's Process, it is clear that Steps I and II do not produce the same function and effect as the Corrected Invention because only a trans-form substance D can be obtained through Steps I and II and a cis-form maxacalcitol that is useful as an active ingredient of a medicine cannot be obtained through those steps. Consequently, it is the entire Defendant's Process that should be compared with the Corrected Invention.

(4) On these bases, the Defendant's Process produces the same function and effect as the Corrected Invention.

Therefore, the Defendant's Process fulfills the second requirement of the doctrine of equivalents.

3. Regarding Issue 3 (third requirement of the doctrine of equivalents)

(1) A process for obtaining a cis-form vitamin D derivative by using a trans-form compound as the starting material and by introducing a side chain into the starting material as appropriate for preparing an intended vitamin D derivative had already been known among persons ordinarily skilled in the art as of the Priority Date (Exhibit Ko 14 and Exhibits Otsu 1 and 2).

In that case, it is recognized that a person ordinarily skilled in the art who knows the Corrected Invention could have easily conceived of the Defendant's Process wherein the cis-form starting material having a vitamin D structure in the Corrected Invention is substituted with a trans form and trans-form substance D is finally converted to a cis form, as of the time when the Defendant's Process was implemented.

(2) The defendants allege as follows: Whether a side chain can be introduced into a trans form, which differs from a cis form in physicality and chemical property, in the same manner as in the case of the Corrected Invention is unclear, and the yield is also

unclear; therefore, a person ordinarily skilled in the art cannot easily conceive of the substitution of a cis form with a trans form.

However, the OH group at position 22 which reacts on the occasion of the introduction of a Maxacalcitol Side Chain is far from the position of the double bonds whose structure differs between a trans form and a cis form. Therefore, it is hardly considered that reaction in the process of introducing a Maxacalcitol Side Chain differs depending on the position of these double bonds. Consequently, it is reasonable to recognize that a person ordinarily skilled in the art can recognize that a Maxacalcitol Side Chain can also be introduced in the same manner as in the case of the Corrected Invention even where a cis-form compound having a vitamin D structure is the starting material, and can also easily conceive of substitution between a trans form and a cis form.

(3) On these bases, it must be said that a person ordinarily skilled in the art could have easily conceived of substituting the starting material and intermediate of the Corrected Invention from those of a trans form to those of a cis form.

Therefore, the Defendant's Process fulfills the third requirement of the doctrine of equivalents.

4. Regarding Issue 4 (fourth requirement of the doctrine of equivalents)

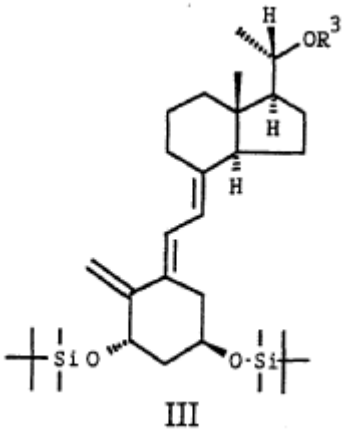
(1) The defendants allege that the Defendant's Process could have been easily presumptively conceived of by a person ordinarily skilled in the art based on publicly known art as of the Priority Date, mainly including Exhibit Otsu 4 Invention.

(2) Exhibit Otsu 4-2 is a publication of Japanese translation of a PCT international application (Publication of Japanese Translation of PCT International Application No. 1992-504573) that was distributed on August 13, 1992, prior to the Priority Date (September 3, 1996).

The following process (Exhibit Otsu 4 Invention) is disclosed in Steps [c] and [d] of the invention of Claim 5 in Exhibit Otsu 4-2 (pages 5 to 7 of Exhibit Ko 29 and Exhibit Otsu 4-2).

A method comprising the following steps: …

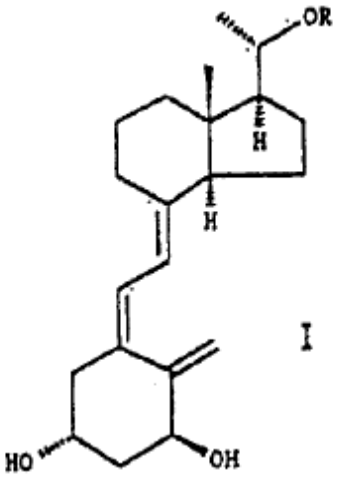
[c]a step wherein 1(S),3(R)-bis-(t-butyldimethylsilyloxy)-9,10-seco-pregna-5(E),7(E), 10(19)-triene-20(S)-ol is alkylated under basic conditions with a side chain building block of Formula Z-R^3 [in which Z is a leaving group such as halogen, p-toluenesulphonyloxy or methanesulphonyloxy] to form a compound of Formula III:



III

[in which R^3 is R (R is as defined above or an analogue thereof) or optionally a radical which can be converted to R]; and

[d] a step wherein a compound of Formula III above is subjected to a triplet-sensitized photoisomerisation, and, if necessary, conversion of R^3 to R, and deprotection, to form the compound of Formula I or an analogue thereof:



I

[in which R stands for an alkyl group containing 7 to 12 carbon atoms optionally substituted with a hydroxyl group].

(3) A common feature between Exhibit Otsu 4 Invention and the Defendant's Process is the fact of being a process for preparing the objective substance that is an intended cis-form vitamin D derivative by using a trans-form vitamin D derivative as the starting material, by alkylating said material with a reagent under basic conditions to produce a trans-form compound, and by converting said trans-form compound to a cis-form

compound. However, Exhibit Otsu 4 Invention and the Defendant's Process differ in the following points.

(Difference 1) In the Defendant's Process, a side chain is introduced with 4-bromo-2,3-epoxy-2-methylbutane (the Reagent), and the epoxy ring introduced with the Reagent is opened. On the other hand, in Exhibit Otsu 4 Invention, the reagent for introducing a side chain is one that is indicated by Formula Z-R^3, and the reagent does not contain an epoxy group. Additionally, the step of opening the epoxy ring introduced with the reagent by treating it with a reducing agent is not disclosed.

(Difference 2) The objective substance of the Defendant's Process is maxacalcitol, and the number of carbon atoms of the side chain to be introduced is 5. On the other hand, the objective substance of Exhibit Otsu 4 Invention is one for which the number of carbon atoms of the introduced side chain is 7 to 12, and it is thus not maxacalcitol.

(4) Regarding Difference 2

As the objective substance of Exhibit Otsu 4 Invention is not maxacalcitol, a motivation to apply Exhibit Otsu 4 Invention to the preparation of maxacalcitol is first necessary to presumptively conceive of the Defendant's Process from Exhibit Otsu 4 Invention.

In this regard, there is the following statement in line 10 and thereafter in the upper right column on page 6 of Exhibit Otsu 4-2: "Compounds 3 … are very versatile intermediates not only for the preparation of Compound I of the Invention, but also for other analogues of Formula I in which Group R is excluded from the Invention, such as the previously known 22-oxa-1,25-$(OH)_2D_3$. Indeed, we have conveniently used the reactions of both Schemes 1 and 2 for the synthesis of reference samples of 22-oxa-1,25-$(OH)_2D_3$ for direct biological comparison with the compound of the Invention."

"Compound 3" mentioned here is the starting material of Exhibit Otsu 4 Invention (a trans-form vitamin D derivative that is the same as the starting material of the Defendant's Process), and "22-oxa-1,25-$(OH)_2D_3$" is maxacalcitol. Therefore, it is reasonable to recognize that a person ordinarily skilled in the art can easily presumptively conceive of using the starting material of Exhibit Otsu 4 Invention as the starting material and making maxacalcitol the objective substance as substitute for the objective substance of Exhibit Otsu 4 Invention based on the aforementioned suggestion.

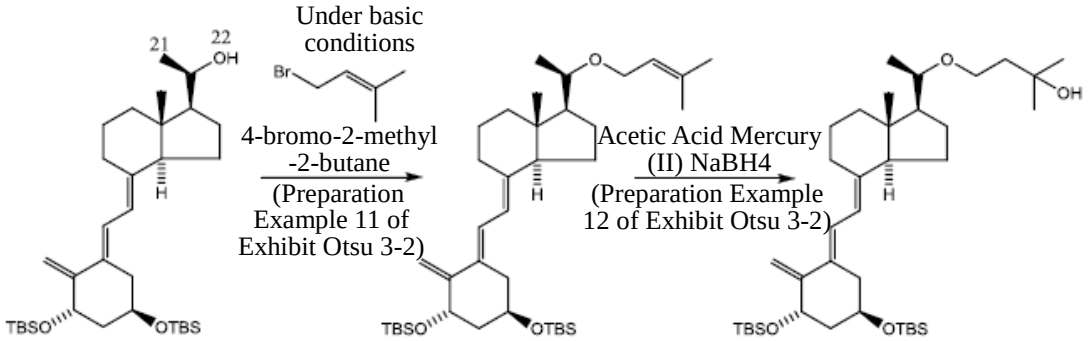
(5) Regarding Difference 1

If Difference 2 is bridged and the objective substance is maxacalcitol, the side chain introduced with the reagent of Exhibit Otsu 4 Invention is not a Maxacalcitol Side

Chain. Therefore, another reaction with another reagent is necessary for introducing a Maxacalcitol Side Chain.

The following is disclosed in Exhibit Otsu 3-2 for an application filed by the same applicant as that for Exhibit Otsu 4-2: The starting material of Exhibit Otsu 4 Invention is used as the starting material and is alkylated under basic conditions with the same reagent as that of Exhibit Otsu 4 Invention, thereby introducing an alkyl group containing 4 to 12 carbon atoms. In "Compound 7" in Table 2 in Exhibit Otsu 3-2, it is disclosed that "-$(CH_2)_2$-C(OH)Me_2, a trans-form compound having a Maxacalcitol Side Chain (this compound differs from maxacalcitol in that it is a trans form in terms of its steric constitution of the methyl group at position 21), was obtained.

This Compound 7 was prepared from Compound 4 by using Acetic Acid Mercury II (Preparation Example 12 of Exhibit Otsu 3-2), and Compound 4 was prepared from Compound 3 (this compound differs from the starting material of Exhibit Otsu 4 Invention only in the methyl group at position 21) by using 4-bromo-2-methyl-2-butane (Preparation Example 11 of Exhibit Otsu 3-2). This reaction is graphically illustrated as follows.



Compound 3 of Exhibit Otsu 3-2 | Compound 4 of Exhibit Otsu 3-2 | Compound 7 of Exhibit Otsu 3-2

It can be said that a person ordinarily skilled in the art who sees these publicly known documents can easily presumptively conceive of a process for preparing maxacalcitol by a process wherein the starting material of Exhibit Otsu 4 Invention is used as the starting material, the OH group at position 22 of the starting material is substituted with a side chain as indicated in the middle figure above by the same process as Preparation Example 11 of Exhibit Otsu 3-2, the side chain is then substituted with a Maxacalcitol Side Chain by the same process as Preparation Example 12 of Exhibit Otsu 3-2, and finally, a trans form is converted to a cis form.

However, Exhibits Otsu 4-2 and 3-2 neither describe nor suggest anything about a

process that is different from the aforementioned process which comprises the step of epoxidizing the OH group at position 22 of the starting material by using the Reagent, the step of then introducing a Maxacalcitol Side Chain by opening the epoxy ring, and the step of finally converting a trans form to a cis form, and thereby preparing maxacalcitol.

In this regard, the Reagent itself was publicly known (Exhibit Otsu 9), but neither Exhibit Otsu 4-2, [nor] Exhibit Otsu 9, nor other publicly known documents submitted in the lawsuit in question as documentary evidence describe or suggest that the reagent described in Exhibit Otsu 9 is used for the preparation of maxacalcitol.

In that case, as mentioned above, even a person ordinarily skilled in the art, who has conceived of applying Exhibit Otsu 4 Invention to the preparation of maxacalcitol, cannot be considered to have a motivation to presumptively conceive of the Defendant's Process by combining the reagent described in Exhibit Otsu 9 with Exhibit Otsu 4 Invention. Difference 1 cannot be considered to be one that can be easily conceived of by a person ordinarily skilled in the art.

(6) On these bases, the Defendant's Process cannot be considered to be one that could have been easily presumptively conceived of by a person ordinarily skilled in the art based on the publicly known art alleged by the defendants.

Consequently, the Defendant's Process fulfills the fourth requirement of the doctrine of equivalents.

5. Regarding Issue 5 (fifth requirement of the doctrine of equivalents)

(1) The defendants allege that in the cases where the starting material has a vitamin D structure in the Corrected Invention, it should be considered that the starting material was purposefully limited to cis-form materials.

(2) In Claim 13 in the scope of claims in the Corrected Description (Exhibit Ko 15), a cis-form vitamin D structure is graphically illustrated in the parts where the vitamin D structure of Constituent Feature [A] is graphically illustrated and where a vitamin D structure is graphically illustrated in other claims (pages 1 to 12 of the Corrected Description).

In addition, the detailed explanation of the invention in the Corrected Description graphically illustrates a cis-form vitamin D structure in the places where a vitamin D structure, or the starting material, intermediate or the objective substance of the Corrected Invention is explained (pages 17 to 19, 21, 22, 24, 27, 32, 34 to 38, 43, and 45 to 48 of the Corrected Description).

However, terms that clearly specify the distinction between a cis form and a trans form, such as "cis form," "trans form," "5E," or "5Z," are not used in the Corrected

Description. There is also no circumstance where the Patent was registered based on a difference from prior art wherein a trans form is used.

In that case, the Corrected Invention is not recognized as purposefully limiting the starting material and the intermediate to cis–form materials, or as purposefully excluding trans-form materials from the starting material and the intermediate, in the case where the starting material and the intermediate have a vitamin D structure.

(3) If an applicant ventures to state only a specific structure in the scope of claims despite the fact that the description discloses other candidate structures and that he/she could easily state such other structures, it should not be permitted to apply the doctrine of equivalents to said other structures because such application does not fulfill the fifth requirement of the doctrine of equivalents (judgment of the Intellectual Property High Court of September 26, 2012, Hanji, No. 2172, at 106 [Process for Generating Visible Medical Image case]). The defendants alleged that Columbia University and the plaintiff who are the applicants for the Patent (hereinafter referred to as the "Applicants") purposefully limited the starting material to cis–form materials, by pointing out the following: [i] "9,10-seco-5,7,10(19)-pregnatriene--*1*α,3β,20β-triol" (page 30 of the Corrected Description) wherein hydroxyl groups are intentionally protected, which is described in International Patent Publication WO/1990/09991 (September 7, 1990) and WO/1990/09992 (September 7, 1990)," which is cited in the Corrected Description as an example of publicly known compounds that can be used as the starting material, is considered to be a trans-form compound having a vitamin D structure based on the publications of Japanese translations of PCT international applications (Exhibits Otsu 3-2 and 4-2) corresponding to the cited international patent publications (Exhibits Otsu 3-1 and 4-1), and a clear distinction is made between a trans form and a cis form; [ii] it is clearly specified that manufacturing approval for medicine was given in relation to maxacalcitol, the objective substance, as a cis form, and the structural formula also clearly specifies maxacalcitol as a cis form (Exhibit Otsu 5); (iii) hydrogen atoms in the epoxyalkoxy part of the intermediate of the Corrected Invention are stereoisomerically arranged, and Constituent Feature [B-3] describes a chemical bond by a wavy line, "～H," to indicate the arrangement, thereby clearly specifying that the three-dimensional structure at the root of H includes both R-*stereoisomer and S-stereoisomer; [iv] the Corrected Description indicates two figures on the left and right sides as the examples of vitamin D structures protected by SO_2 (page 28 of the Corrected Description); although those figures indicate the same single bond compound reversed, the right figure was purposefully described in consideration of a trans form that is generated after SO_2 is eliminated.*

However, first looking at point [i] above, even if a trans form and a cis form are distinguished in the content of the documents cited in the Corrected Description, there is no statement that clearly distinguishes a trans form and a cis form in the text of the Corrected Description, as mentioned above. Therefore, this point does not provide evidence to prove that the Applicants purposefully *limited the starting material to cis-form materials.*

Next, considering point [ii] above, even if the objective substance is a cis form, it is not that the starting material must also be a cis form. Therefore, point [ii] does not provide evidence to prove that the Applicants purposefully *limited the starting material. Although a process for obtaining a cis-form objective substance from a trans-form starting material was publicly known (Exhibits Otsu 1, 2, 3-2, and 4-2), the Corrected Description did not disclose such other candidate structures. Therefore, even if the Applicants did not state trans-form starting materials, it cannot be said that they* purposefully *limited the starting material to cis-form materials.*

It should be considered that, in order to say that a structure pertaining to the Subject Product, etc. was purposefully excluded from the scope of claims in the patent application procedures, it is necessary that the applicant or the patentee acknowledges in the application procedures, etc. that the structure pertaining to the Subject Product, etc. is not included in the scope of claims, or clearly recognizes the structure pertaining to the Subject Product, etc. and has taken action that can be externally evaluated as excluding said structure from the scope of claims (i.e. the act of excluding said structure from the scope of claims through an amendment or correction). It cannot be said that the applicant or the patentee purposefully excluded the structure pertaining to the Subject Product, etc. from the scope of claims only because he/she did not include said structure in the scope of claims despite the fact that said structure could have been easily conceived of by a person ordinarily skilled in the art in light of publicly known art, etc. as of the time of the filing of the patent application (see the judgment of the Intellectual Property High Court of September 25, 2006, 2005 (Ne) 10047 [Air Massage Chair case]).

Considering point [iii] above, "R-S stereoisomerism" (enantiomerism) and "cis-trans stereoisomerism" (geometric isomerism) differ in the property. Therefore, even if there is a statement based on the premise of the distinction between R-s*tereoisomer and S-stereoisomer in the Corrected Description, the statement does not provide evidence to prove that the starting material was* purposefully *limited to cis-form materials.*

Considering point [iv] above, there is no sufficient evidence to recognize the figures pointed out by the defendants as descriptions that were made in consideration of trans

forms. Even if two kinds of figures (which do not indicate a trans form and a cis form but indicate the same structure reversed) are stated in relation to the vitamin D structure protected by the addition of SO_2, the statement does not provide evidence to prove that the starting material was purposefully *limited to cis-form materials.*

(4) On these bases, there are no special circumstances, such as where the Defendant's Process using a trans-form starting material falls under one that was purposefully *excluded from the scope of claims in the application procedures, etc. for the Patent, in this case.*

Therefore, the Defendant's Process fulfills the fifth requirement of the doctrine of equivalents.

6. Regarding Issue 6 (Ground for Invalidation 1: lack of an inventive step by citing Exhibit Otsu 9 as the primarily cited document)

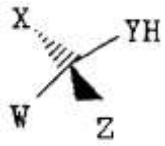
(1) Exhibit Otsu 9 is a paper titled "Reactions of 1-halo-3-methyl-2,3-epoxybutane with alcohols," which was placed in a book titled "CHEMISTRY OF HETEROCYCLIC COMPOUNDS" that was distributed in 1982 prior to the Priority Date (September 3, 1996).

Exhibit Otsu 9 discloses the following process (Exhibit Otsu 9 Invention).

A process for forming epoxy ethers by reacting 1-bromo (or chloro)-3-methyl-2,3 -epoxybutane and alcohols in the presence of alkali metal alkoxides.

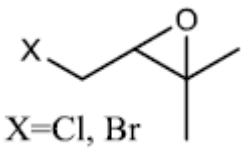
(2) "1-bromo (or chloro)-3-methyl-2,3-epoxybutane" corresponds to the Reagent of the Corrected Invention, and "alkali metal alkoxides" correspond to a "base" of the Corrected Invention. Therefore, Exhibit Otsu 9 Invention and the Corrected Invention have a common feature in that they are a "process comprising

[a] the step of reacting a compound having the following structure:

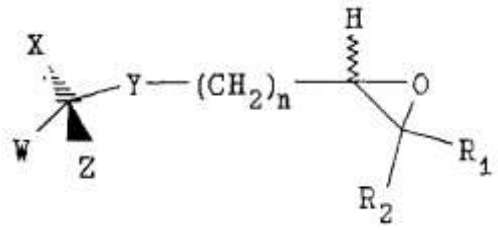


(in the formula, each of W and X is independently hydrogen or methyl; Y is O)

in the presence of a base, with a compound having the following structure:



to produce an epoxide compound having the following structure:

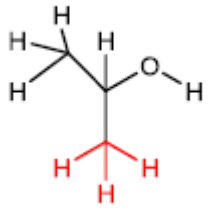


(in the formula, W, X, and Y are as defined above, n=1, R_1 and R_2 are methyl); and
[c] the step of recovering the compound so produced,"
that is, a process for producing an epoxide compound by using a compound having an OH group as the starting material and by reacting said material with the Reagent in the presence of a base. On the other hand, those inventions differ in the following points. Incidentally, the plaintiff seemed to allege, in part, that the "presence of a base" is also a difference (pages 20 to 21 of the plaintiff's third brief). However, the plaintiff is considered not to allege it as a difference in the end (page 5 of the plaintiff's 14th brief).
(Difference 1) In the Corrected Invention, "Z," which is the starting material, is a cis-form vitamin D structure (it may be a steroid ring structure, but this point does not affect the conclusion of the determination concerning involvement of an inventive step) (Constituent Feature [A-6]). On the other hand, it is "methyl" in Exhibit Otsu 9 Invention.
(Difference 2) The Corrected Invention comprises "[b] the step of treating the epoxide compound with a reducing agent to produce a compound" (Constituent Feature [C]). On the other hand, it is not necessarily clear that Exhibit Otsu 9 Invention comprises this step.
(Difference 3) The substance formed in Exhibit Otsu 9 invention is epoxy ethers and is not the objective substance of the Corrected Invention.
(3) Regarding Difference 3
A. As Exhibit Otsu 9 Invention is not to prepare the objective substance of the Corrected Invention, a person ordinarily skilled in the art has to have a motivation to apply Exhibit Otsu 9 Invention for the preparation of the objective substances of the Corrected Invention (for example, maxacalcitol) in order to conceive of the Corrected Invention based on Exhibit Otsu 9 Invention.

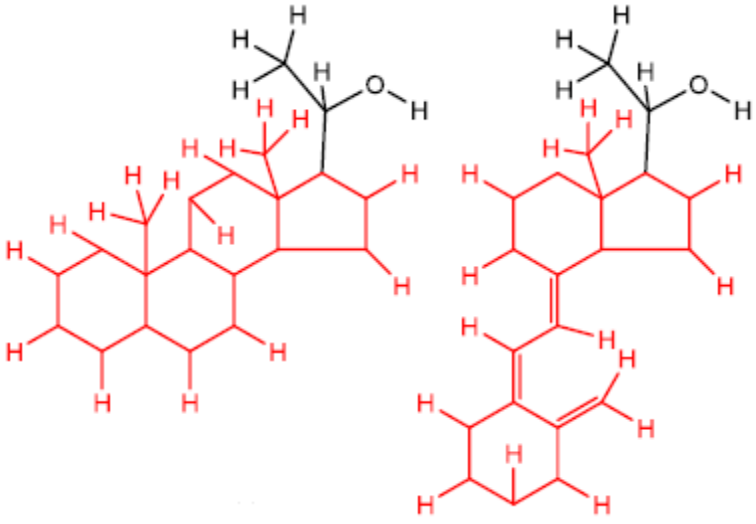
Although the objective substances of the Corrected Invention, including maxacalcitol, themselves were publicly known (Exhibit Otsu 4-2), neither Exhibit Otsu 9, Exhibit Otsu 4-2, nor other publicly known documents submitted in the lawsuit in question as documentary evidence describe or suggest that the reagent of Exhibit Otsu 9 is used for the preparation thereof.

B. The defendants allege as follows: When a process for introducing a side chain similar to a Maxacalcitol Side Chain into a vitamin D derivative by using a vitamin D derivative as the starting material is being considered (Exhibits Otsu 3-2 and 4-2), Exhibit Otsu 9 is also related to the technical problem of the introduction of a specific side chain structure, and isopropyl alcohol (d R = i – C_3H_7) that is disclosed in Exhibit Otsu 9 as the starting material is similar to the part at position 20 of a side chain of a vitamin derivative in terms of the structure; therefore, a person ordinarily skilled in the art easily conceives of introducing a Maxacalcitol Side Chain by applying the reagent of Exhibit Otsu 9 to the starting material having a vitamin D structure or a steroid structure.

However, isopropyl alcohol is low-molecular-weight liquid, which has a molecular weight of 60, and all the other alcohols disclosed in Exhibit Otsu 9 are liquid having molecular weight of around 32 to 108. On the other hand, the starting material of the Corrected Invention is a substance having a molecular weight of about 300, which is solid at room temperature. Said alcohols and the starting material of the Corrected Invention significantly differ in terms of structure, as indicated in the following figures.



Isopropyl alcohol
(The methyl group is indicated in red)



Starting material in question
(Z (a steroid structure or a vitamin D structure) is indicated in red)

In that case, it cannot be said that a person ordinarily skilled in the art easily conceives of combining the reagent of Exhibit Otsu 9 with the starting material having a vitamin D or steroid structure by considering that the reaction described in Exhibit Otsu 9 is also similarly applicable to the starting material having a steroid structure or a vitamin D structure.

The defendants submitted a written opinion of a pharmaceutical researcher (Exhibit Otsu 15). However, the written opinion does not explain structural differences between isopropyl alcohol and the starting material having a vitamin D structure. Therefore, it does not affect the aforementioned finding.

In addition, the defendants allege that Exhibit Otsu 9 is related to the technical problem of the introduction of a specific side chain structure, but Exhibit Otsu 9 does not involve the technical problem of the introduction of a Maxacalcitol Side Chain. Therefore, it cannot be said that a person ordinarily skilled in the art who faces the technical problem of the introduction of a Maxacalcitol Side Chain has a motivation to use the reagent of Exhibit Otsu 9.

C. Exhibits Otsu 3-2 and 14 are not those whose objective substance is the objective substances of the Corrected Invention, including maxacalcitol. Therefore, a person ordinarily skilled in the art will never conceive of the Corrected Invention even if he/she combines Exhibits Otsu 9, 3-2, and 14.

D. In Exhibit Ko 13 (its translation is Exhibit Otsu 13) and Exhibit Otsu 24, which are the papers of the inventors of the Corrected Invention, it is stated that the inventors of the Corrected Invention conceived of the Corrected Invention after seeing the paper of Exhibit Otsu 9 (Reference Document 12 of Exhibit Otsu 13 and Reference Document 6 of Exhibit Otsu 24).

However, both Exhibit Ko 13 (Exhibit Otsu 13) and Exhibit Otsu 24 were written in 2004 and 2009, respectively, after the Patent was registered, by thinking back to the trigger that resulted in the invention, and they cannot be considered to show recognition of persons ordinarily skilled in the art as of the Priority Date (September 3, 1996). Therefore, even based on these papers, it cannot be said that a person ordinarily skilled in the art could have easily conceived of the use of the reagent of Exhibit Otsu 9 for a process for preparing the objective substances of the Corrected invention.

E. On these bases, it cannot be said that Difference 3 can be easily conceived of by a person ordinarily skilled in the art.

(4) Summary

As mentioned above, it cannot be said that Difference 3 can be easily conceived of by a person ordinarily skilled in the art. Therefore, it can be said, without the need for considering other differences, that the Corrected Invention cannot be easily conceived of by a person ordinarily skilled in the art based on Exhibit Otsu 9 Invention.

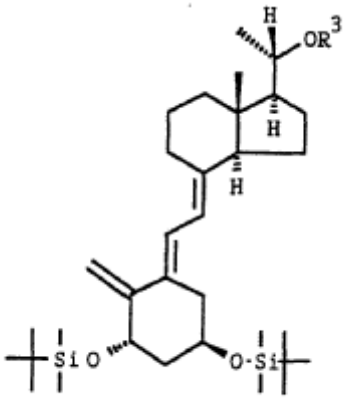
Consequently, there is no reason for Ground for Invalidation 1 (lack of an inventive step by citing Exhibit Otsu 9 as the primarily cited document).

7. Regarding Issue 7 (Ground for Invalidation 2: lack of an inventive step by citing Exhibit Otsu 4-2 as the primarily cited document)

(1) Exhibit Otsu 4-2 (Publication of Japanese Translation of PCT International Application No. 1992-504573), which was distributed on August 13, 1992, prior to the Priority Date (September 3, 1996), discloses the following process (Exhibit Otsu 4 Invention).

A method comprising the following steps: …

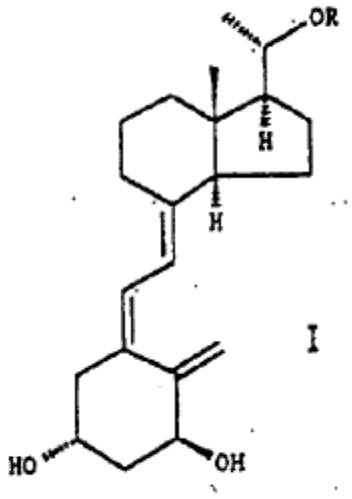
[c] a step wherein 1(S),3(R)-bis-(t-butyldimethylsilyloxy)-9,10-seco-pregna-5(E),7(E), 10(19)-triene-20(S)-ol is alkylated under basic conditions with a side chain building block of Formula Z-R^3 [in which Z is a leaving group such as halogen, p-toluenesulphonyloxy or methanesulphonyloxy] to form a compound of Formula III:



III

[in which R^3 is R (R is as defined above or an analogue thereof) or optionally a radical which can be converted to R]; and

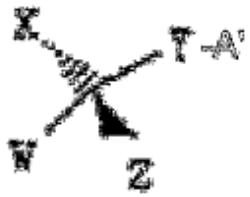
[d] a step wherein a compound of Formula III above is subjected to a triplet-sensitized photoisomerisation, and, if necessary, conversion of R^3 to R, and deprotection, to form the compound of Formula I or an analogue thereof:



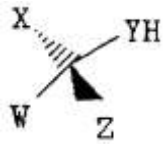
I

[in which R stands for an alkyl group containing 7 to 12 carbon atoms optionally substituted with a hydroxyl group].

(2) Exhibit Otsu 4 Invention and the Corrected Invention have a common feature in the following point:
"being a process for preparing a compound having the following structure:



(in the formula, each of W and X is independently hydrogen or methyl; Y is O; and Z is a vitamin D structure)
which comprises:
[a] the step of reacting a compound having the following structure:

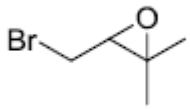


(in the formula, W, X, Y and Z are as defined above) in the presence of a base, with a compound having the following structure:

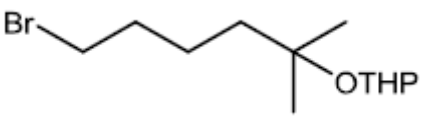
E − B

(in the formula, E is an eliminating group) to produce a compound having the following structure:

(in the formula, W, X, Y and Z are as defined above);
[b] the step of having the compound further react to produce a compound that is a cis-form vitamin D derivative; and
[c] the step of recovering the compound so produced,"
that is, being a process for preparing the objective substance having a vitamin D structure by using a compound having a vitamin D structure as the starting material and reacting it with a reagent in the presence of a base. On the other hand, those inventions differ in the following points.
(Difference 1) Regarding "Y-A," which is the objective substance, in Exhibit Otsu 4 Invention, Y is O, and A is an alkyl group containing 7 to 12 carbon atoms substituted with a OH group and is not a Maxacalcitol Side Chain limited by the Corrected Invention.
(Difference 2) In the Corrected Invention, Z, the starting material or the intermediate, is a cis-form compound having a vitamin D structure. On the other hand, in Exhibit Otsu 4 Invention, Z, the starting material or the intermediate, is a trans-form compound having a vitamin D structure.
(Difference 3) In the Corrected Invention, Compound "E-B" (used as a reagent) has the following structure:



on the other hand, in Exhibit Otsu 4 Invention, Compound "E-B," even one that is the closest to that in the Corrected Invention, has the following structure:



THP = tetrahydropyran

(Difference 4) In the Corrected Invention, the intermediate is an epoxide compound having an epoxy group. On the other hand, the intermediate of Exhibit Otsu 4 Invention is a trans-form compound having a vitamin D structure, which has the same side chain as the objective substance.

(Difference 5) In the Corrected Invention, Step [b] is "[b] the step of treating the epoxide compound with a reducing agent to produce a compound." On the other hand, in Exhibit Otsu 4 Invention, Step [b] is a treatment to convert the trans-form intermediate to the cis-form objective substance through photoisomerization.

(3) Regarding Difference 3

The side chain introduced with the reagent of Exhibit Otsu 4 Invention is not a Maxacalcitol Side Chain. Therefore, another reaction with another reagent is necessary for introducing a Maxacalcitol Side Chain. Exhibits Otsu 4-2 and 3-2 neither describe nor suggest a process for preparing maxacalcitol by epoxidizing the OH group at position 22 of the starting material with the Reagent, then introducing a Maxacalcitol Side Chain by opening the epoxy ring, and finally converting a trans form to a cis form.

The Reagent itself was publicly known (Exhibit Otsu 9), but neither Exhibit Otsu 4-2, Exhibit Otsu 9, nor other publicly known documents submitted as documentary evidence describe or suggest that the reagent described in Exhibit Otsu 9 is used for the preparation of the objective substances of the Corrected Invention, including maxacalcitol.

In that case, even assuming that a person ordinarily skilled in the art conceived of applying Exhibit Otsu 4 Invention for the introduction of a Maxacalcitol Side Chain, it cannot be immediately said that a person ordinarily skilled in the art has a motivation to combine the reagent described in Exhibit Otsu 9 with Exhibit Otsu 4 Invention.

Therefore, it cannot be said that a person ordinarily skilled in the art can easily conceive of Difference 3.

(4) Summary

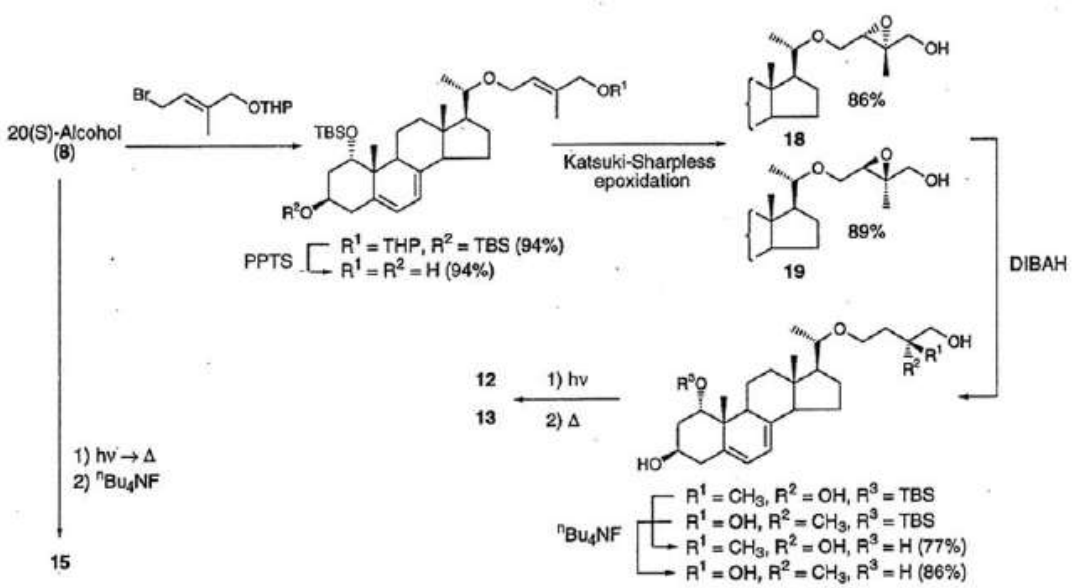
On these bases, it cannot be said that Difference 3 can be easily conceived of by a person ordinarily skilled in the art. Therefore, it can be said, without the need for considering other differences, that the Corrected Invention cannot be easily conceived of by a person ordinarily skilled in the art based on Exhibit Otsu 4 Invention.

Consequently, there is no reason for Ground for Rescission 2 (lack of an inventive step by citing Exhibit Otsu 4-2 as the primarily cited document).

8. Regarding Issue 8 (Ground for Invalidation 4: lack of an inventive step by citing Exhibit Otsu 14 as the primarily cited document)

(1) Exhibit Otsu 14 is a paper titled "Active Vitamin D Analogs—Important and Various Roles by Medicinal Chemists during the Course of Development of Promising Candidates as Useful Medicines," which was written by Hei I, who is one of the inventors of the Corrected Invention, and was placed in "Journal of Synthetic Organic Chemistry, Japan, Vol. 54, No. 2" distributed on February 1, 1996, prior to the Priority Date (September 3, 1996). (The paper in note 13 of Exhibit Otsu 14 (Exhibit Ko 20) is stated as having been published in 1994, but it is not Exhibit Ko 20 but Exhibit Otsu 14 that the defendants cite as the primarily cited document; therefore, the content disclosed in Exhibit Otsu 14 alone is considered below.)

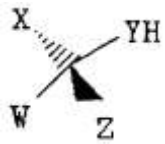
Exhibit Otsu 14 contains the following figures, and discloses a process for obtaining the steroid compound indicated at the bottom right below by reacting 20(S)-alcohol(8) and 4-bromo-2-methyl-2-butane to produce the steroid compound having the prenyl group indicated in the middle figure below, by producing epoxide compounds of 18 and 19 below through the Katsuki-*Sharpless reaction, and by using DIBAH (diisobutylaluminum hydride) for the produced epoxide compounds (Exhibit Otsu 14 Invention).*



(2) Exhibit Otsu 14 Invention and the Corrected Invention have a common feature in the following point:

"being a process for preparing a compound having the following structure:

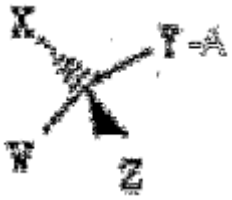
(in the formula, each of W and X is independently hydrogen or methyl; Y is O; and Z is a steroid ring structure)
which comprises:
[a] the step of reacting a compound having the following structure:



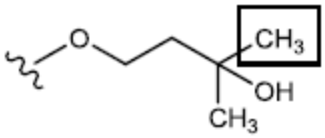
(in the formula, W, X, Y and Z are as defined above) with a compound having the following structure:

$$E - B$$

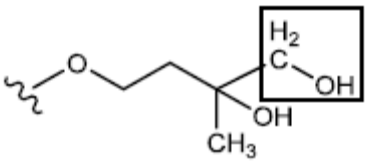
(in the formula, E is an eliminating group) to produce an epoxide compound having the following structure:



[b] the step of treating the epoxide compound with a reducing agent to produce the compound; and
[c] the step of recovering the compound so produced,"
that is, being a process for preparing an intended steroid compound by using a compound having a OH group as the starting material, by reacting the material with a reagent to produce an epoxide compound, and by treating the epoxide compound. Those inventions differ in the following points.
(Difference 1) Regarding "Y-A'," which is the objective substance, the side chain of Exhibit Otsu 14 Invention indicated in the figure below on the right is not a Maxacalcitol Side Chain indicated in the figure below on the left which is limited by the Corrected Invention.



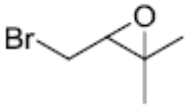
Maxacalcitol Side Chain



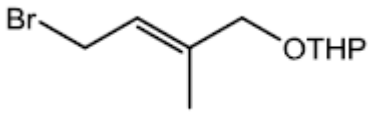
Side chain of metabolite of maxacalcitol of Exhibit Otsu 14

(Difference 2)

In the Corrected Invention, Compound "E-B" (used as a reagent) is "4-bromo-2,3-epoxy-2-methylbutane" (the Reagent) having the following structure:

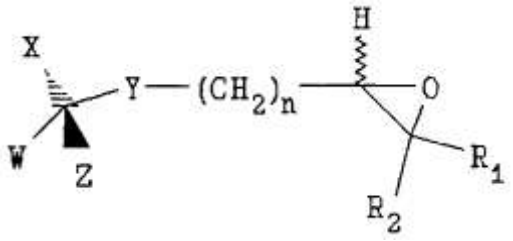


on the other hand, in Exhibit Otsu 14 Invention, Compound "E-B" is "4-bromo-2-methyl-tetrahydropyranyloxy-2-butane" having the following structure:



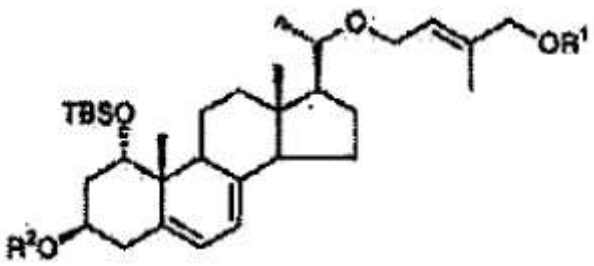
THP = tetrahydropyran

(Difference 3) In the Corrected Invention, the starting material and Compound "E-B" are reacted in the presence of a base to obtain an epoxide compound having the following structure:

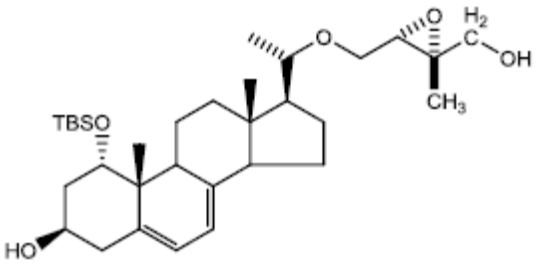


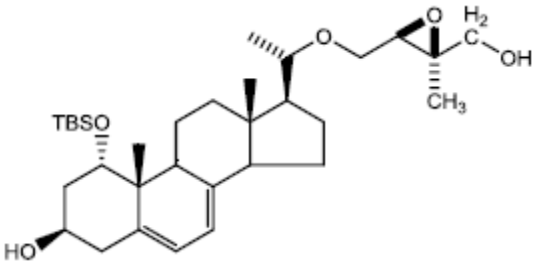
n=1, R_1 and R_2= methyl

on the other hand, in Exhibit Otsu 14 Invention, a compound having the following structure is produced through reaction of the starting material and Compound "E-B":



and then, epoxide compounds having the following structures are produced by using the Katsuki-*Sharpless reaction:*





Epoxide Compound 18 of Exhibit Otsu 14 Epoxide Compound 19 of Exhibit Otsu 14

(3) Regarding Difference 2

A. As the reagent of Exhibit Otsu 14 Invention differs from that of the Corrected Invention, a person ordinarily skilled in the art has to have a motivation to use the reagent of the Corrected Invention as substitute for the reagent of Exhibit Otsu 14 Invention in order to conceive of the Corrected Invention based on Exhibit Otsu 14 Invention.

The structure of the Reagent itself was publicly known (Exhibit Otsu 9), but neither Exhibit Otsu 14 nor Exhibit Otsu 9 describe or suggest that the reagent described in Exhibit Otsu 9 is used as substitute for the reagent of Exhibit Otsu 14 Invention.

In that case, it cannot be said that a person ordinarily skilled in the art has a motivation to combine the reagent described in Exhibit Otsu 9 with Exhibit Otsu 14 Invention.

B. The defendants allege that a person ordinarily skilled in the art easily conceives of introducing a Maxacalcitol Side Chain by using the reagent described in Exhibit Otsu 9 as substitute for the reagent of Exhibit Otsu 14 Invention because the reagent of Exhibit Otsu 14 Invention and the reagent described in Exhibit Otsu 9 are similar to each other in structure.

However, the reagent of Exhibit Otsu 14 Invention was selected for the reaction of

Exhibit Otsu 14, and a different reaction is developed if a different reagent is used. Therefore, even if the reagent of Exhibit Otsu 14 Invention and the reagent described in Exhibit Otsu 9 are similar to each other in structure, it cannot be said that a person ordinarily skilled in the art has a motivation to use the reagent described in Exhibit Otsu 9 as substitute for the reagent of Exhibit Otsu 14 Invention.

C. There is the following statement in Exhibit Ko 13 (its translation is Exhibit Otsu 13), which is a paper that was written by the inventor of the Corrected Invention: "Epoxybromide 12 [note in this judgment: the Reagent] is similar both sterically and electronically to prenyl bromide [note in this judgment: 4-bromo-2-methyl-2-butane; it differs from the reagent of Exhibit Otsu 14] in consideration of its bulkiness and property in the sp2 state in relation to the function of the epoxy group. Therefore, we could easily conceive of the fact that the reagent reacts with Secondary Alcohol 4 [note in this judgment: the starting material of the Corrected Invention], thereby being able to prepare Epoxy Ether 13 [note in this judgment: the objective substance of the Corrected Invention] [note in this judgment: original text: "We could readily assume" [page 17 of the plaintiff's third brief]]."

However, Exhibit Ko 13 (Exhibit Otsu 13) was written in 2004 after the Patent was registered, by thinking back to the trigger that resulted in the Invention. Therefore, it cannot be considered to show recognition of persons ordinarily skilled in the art as of the Priority Date (September 3, 1996). Consequently, it cannot be said, based on this paper, that a person ordinarily skilled in the art could have easily conceived of using the reagent described in Exhibit Otsu 9 as substitute for the reagent of Exhibit Otsu 14 Invention.

D. Exhibit Otsu 25 is a republished patent (WO/2002/017932) of the patent for which an application was filed by the plaintiff in 2001, in which there is the following statement: "OCT [note in this judgment: maxacalcitol], which is the active ingredient of the preparation of this invention, is a publicly known substance, and it can be prepared by a publicly known process. For example, it can be prepared by the processes described in … Kubodera, et al. (Bioorganic & Medicinal Chemistry Letters, 4 (5): 753-756, 1994) [note in this judgment: paper of Exhibit Ko 20 which is cited in note 13 of Exhibit Otsu 14] …."

Based on the aforementioned statement, the defendants allege that the plaintiff itself has clarified that the knowledge of Exhibit Otsu 14 can be used for the introduction of a Maxacalcitol Side Chain.

However, even if the knowledge of Exhibit Ko 20 can be used for the introduction of a Maxacalcitol Side Chain, the fact remains that it cannot be said that a person

ordinarily skilled in the art could have easily conceived of using the reagent described in Exhibit Otsu 9 as substitute for the reagent of Exhibit Otsu 14 Invention.

E. Therefore, it cannot be said that a person ordinarily skilled in the art can easily conceive of Difference 2 (difference in the reagent).

(4) Regarding Difference 3

Neither Exhibit Otsu 14 nor other publicly known documents submitted in the lawsuit in question describe or suggest motivation of a person ordinarily skilled in the art to obtain an epoxide compound, which is the intermediate of the Corrected Invention, as substitute for the epoxide compound of Exhibit Otsu 14 Invention. Therefore, it can also not be said that a person ordinarily skilled in the art can easily conceive of Difference 3 (difference in the epoxide compound).

(5) Summary

On these bases, it cannot be said that Differences 2 and 3 can be easily conceived of by a person ordinarily skilled in the art. Therefore, it can be said, without the need for considering other differences, that the Corrected Invention cannot be easily conceived of by a person ordinarily skilled in the art based on Exhibit Otsu 14 Invention.

Consequently, there is no reason for Ground for Invalidation 4 (lack of an inventive step by citing Exhibit Otsu 14 as the primarily cited document).

9. Regarding Issue 9 (Ground for Invalidation 5: violation of the enablement requirement)

(1) The defendants allege that the detailed explanation of the invention in the Corrected Description does not contain any statement that enables a person ordinarily skilled in the art to work the Invention in the case where the starting material and the objective substance have a vitamin D structure.

Article 36, paragraph (4) of the Patent Act prior to amendment by Act No. 24 of 2002 is considered to mean that if the detailed explanation of the invention in the description does not describe the structure, etc. of an invention to the extent that a person ordinarily skilled in the art can work the invention, it is concluded that the invention is not disclosed, and it is construed that the precondition for granting to the inventor the exclusive right as provided for in the Patent Act is not met.

The working of an invention in relation to an invention of a process of producing a product means the use, etc. of the process (Article 2, paragraph (3), items (iii) and (ii) of the Patent Act). Therefore, in order to fulfill the enablement requirement in relation to an invention of a process of producing a product, the process must be specifically stated in the description. However, even if there is no such statement, the description can be

considered to fulfill the enablement requirement if a person ordinarily skilled in the art can use the process of producing a product without excessive burden by setting various factors based on the statements in the description and drawings as well as common general technical knowledge as of the filing of the patent application (see the judgement of the Intellectual Property High Court of December 5, 2012; Hanji, No. 2176, at 83).

(2) Considering this point in relation to this case, the Corrected Description (Exhibit Ko 15) contains explanations about the structures of and the processes for obtaining the starting material, reactant (reagent), base, reducing agent, etc. of the Corrected Invention as well as their reactions (pages 24 to 49 of the Corrected Description). There is also the following statement in relation to the Reaction in the First Step: "The reaction temperature may appropriately be controlled, generally in the range from 25°C to a reflux temperature of a solvent, preferably from 40°C to 65°C. The reaction time may appropriately be controlled, generally in the range from 1 hour to 30 hours, preferably from 2 hours to 5 hours. The progress of the reaction can be monitored by thin layer chromatography (TLC)" (page 31 of the Corrected Description). Moreover, there is the following statement in relation to the Reaction in the Second Step: "The reaction in Step (2) is preferably carried out in an inert solvent. Examples of the solvent that can be used include diethylether, tetrahydrofuran (THF), dimethylformamide (DMF), benzene and toluene, with diethylether and tetrahydrofuran being preferred. The reaction temperature in Step (2) may appropriately be controlled, generally in the range from 10°C to 100°C, preferably from room temperature to 65°C. The reaction time in Step (2) may appropriately be controlled, generally in the range from 30 minutes to 10 hours, preferably from 1 hour to 5 hours. The progress of the reaction can be monitored by thin layer chromatography (TLC)." However, the working examples that further state various factors of specific reaction conditions are only those for the case where "Z" mentioned in Constituent Feature [A-6'] is a steroid ring structure (pages 49 to 57 of the Corrected Description).

The reaction of the Corrected Invention is to obtain a Maxacalcitol Side Chain by reacting the OH group of the starting material with the Reagent. Therefore, it is recognized as common general technical knowledge among persons ordinarily skilled in the art as of the Priority Date that the reaction conditions will not significantly differ depending on whether the structure of "Z," the starting material, is a steroid ring structure or a vitamin D structure. For example, Scheme 1 on page 6 of Exhibit Otsu 4-2 describes a reaction to obtain trans-form Substance III having a vitamin D structure wherein the oxygen atom at position 22 is alkylated through Steps [a], [b], and [c] by using, as the starting material, trans-form Substance 1 having a vitamin D structure (N)

wherein a formyl group (CHO) is connected to the carbon atom at position 20. Scheme 2 on page 7 thereof describes a reaction to obtain Substance VII having a CD ring structure wherein the oxygen atom at position 22 is alkylated through Steps [a], [b], and [c] by using, as the starting material, Substance 4 having a CD ring structure (Y) wherein a formyl group is connected to the carbon atom at position 20. These Steps [a], [b], and [c] are described as "Correspond to 1→2→3 of Scheme 1," thereby stating that the reaction makes progress through the same steps (Steps [a], [b], and [c] in the left column on page 6 of Exhibit Otsu 4-2), irrespective of whether the starting material has a vitamin D structure or a CD ring structure.

In that case, comprehensively taking into account the aforementioned statement in the "detailed explanation of the invention" in the Corrected Description, the statement of the working examples in relation to a steroid ring structure, and the aforementioned common general technical knowledge, it is recognized that a person ordinarily skilled in the art who sees the Corrected Description understands that the Corrected Invention can be worked by working it in line with the reaction conditions of the working examples in relation to a steroid ring structure even if "Z" is a vitamin D structure.

(3) Actually, the plaintiff conducted comparative experiments under the same conditions as those for Working Examples 5 and 6 (using a compound having a steroid ring structure as the starting material) in the Corrected Description by using a compound having a steroid ring structure and a cis-form compound having a vitamin D structure as the starting material. As a result, the reaction made the same progress, and the function and effect of the Corrected Invention, shortening the process, was produced and the same good yield as in Working Examples 5 and 6 was achieved (Exhibits Ko 17 and 18). This indicates that the understanding of persons ordinarily skilled in the art that the reaction conditions for the working examples using a starting material having a steroid ring structure are similarly applicable to a starting material having a vitamin D structure is matter of fact.

(4) On these bases, it can be said that the statement of the detailed explanation of the invention in the Corrected Description is clear and sufficient as to enable any person ordinarily skilled in the art to work the Corrected Invention even in the case where the starting material and the objective substance are those having a vitamin D structure.

Therefore, there is no reason for Ground for Invalidation 5 (violation of the enablement requirement).

10. Regarding Issue 10 (Ground for Invalidation 6: violation of the support requirements)

(1) The defendants allege that the Corrected Invention includes a structure which is not

stated in the detailed explanation of the invention in the Description (the structure wherein the starting material and the objective substance have a vitamin D structure).

Whether the statement of the scope of claims complies with Article 36, paragraph (6), item (i) of the Patent Act prior to amendment by Act No. 24 of 2002 should be determined through comparison between the statement of the scope of claims in the description and the statement of the detailed explanation of the invention therein by considering whether the invention stated in the scope of claims is the invention stated in the detailed explanation of the invention and is within the scope which a person ordinarily skilled in the art can recognize as being able to solve the problem to be solved of the invention based on the statement of the detailed explanation of the invention or within the scope which a person ordinarily skilled in the art can recognize as being able to solve the problem to be solved of the invention in light of common general technical knowledge as of the time of the filing of the patent application even without such statement and suggestion (see the judgment of the Intellectual Property High Court of November 11, 2005, Hanji, No. 1911, at 48).

(2) The problem solved by the Corrected Invention is the shortening of the process for preparing the objective substances of the Corrected Invention, including maxacalcitol, by using the two-step reaction comprising the Reaction in the First Step and the Reaction in the Second Step.

In that case, the issue is whether a person ordinarily skilled in the art who sees the Corrected Description can recognize that even if the starting material has a vitamin D structure, the two-step reaction makes progress in the same manner as in the case where the starting material has a steroid ring structure, thereby being able to shorten the process.

According to what is stated in 9.(2) above, it should be said that a person ordinarily skilled in the art who sees the Corrected Description can recognize that even if Z is a vitamin D structure, the two-step reaction makes progress in the same manner as in the case where Z is a steroid ring structure, thereby being able to shorten the process.

(3) On these bases, it can be said that the Corrected Invention is stated in the detailed explanation of the invention in the Corrected Description.

Therefore, there is no reason for Ground for Invalidation 6 (violation of the support requirements).

11. Regarding Issue 11 (necessity of an injunction)

(1) According to the considerations above, the Defendant's Process should be considered to fall under the technical scope of the Corrected Invention as an equivalent to the structure of the Corrected Invention (therefore, it naturally also falls under the

technical scope of the Invention). It cannot be said that there are the grounds for invalidation as alleged by the defendants in relation to the Corrected Invention. Therefore, as long as the Correction Concerning the Invention is accepted, the Patent for the Invention is not recognized as one that should be invalidated by a trial for patent invalidation.

(2) According to the aforementioned facts on which the decision is premised, Defendant's Product 1 is recognized as the maxacalcitol active pharmaceutical ingredient prepared by the Defendant's Process, and all the Defendants' Products 2 are recognized as maxacalcitol preparations prepared by the Defendant's Process (that is, preparations containing maxacalcitol prepared by the Defendant's Process as the active pharmaceutical ingredient [active ingredient]). Therefore, the act of importing or assigning Defendant's Product 1 constitutes infringement of the Patent Right, and the act of assigning or offering for assignment Defendants' Products 2 also constitutes infringement of the Patent Right (Article 2, paragraph (3), item (iii) of the Patent Act).

Consequently, under Article 100, paragraph (1) of the Patent Act, the plaintiff may demand that Defendant DKSH suspend the import and assignment of Defendant's Product 1 and that Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma suspend the assignment and offer for assignment of Defendants' Products 2 (Defendant's Product 2(1) for Defendant Iwaki Seiyaku, Defendant's Product 2(2) for Defendant Takata Pharmaceutical, and Defendant's Product 2(3) for Defendant Pola Pharma, respectively), at least for the period until September 3, 2017, which is the last day of the duration before the extension of the duration of the Patent Right was registered (incidentally, in the lawsuit in question, the plaintiff seeks an injunction against each of the aforementioned acts only for the period until said date; therefore, there is no need for considering the effect of the Patent Right for the period pertaining to the aforementioned registration of extension).

(3) As mentioned in (2) above, Defendant's Product 1 is the maxacalcitol active pharmaceutical ingredient prepared by the Defendant's Process, and all the Defendants' Products 2 are preparations containing maxacalcitol prepared by the Defendant's Process as the active pharmaceutical ingredient (active ingredient). Therefore, under Article 100, paragraph (2) of the Patent Act, the plaintiff may demand that Defendant DKSH dispose of Defendant's Product 1 and that Defendant Iwaki Seiyaku, Defendant Takata Pharmaceutical, and Defendant Pola Pharma dispose of Defendants' Products 2 (Defendant's Product 2(1) for Defendant Iwaki Seiyaku, Defendant's Product 2(2) for Defendant Takata Pharmaceutical, and Defendant's Product 2(3) for Defendant Pola Pharma, respectively).

12. Conclusion

On these bases, there is a reason for all the plaintiff's claims. Therefore, the plaintiff's claims shall be upheld, and the judgment shall be rendered in the form of the main text (incidentally, a declaration of provisional execution shall not be made as it is not reasonable in consideration of this case).

Tokyo District Court, 29th Civil Division

Presiding judge: SHIMASUE Kazuhide

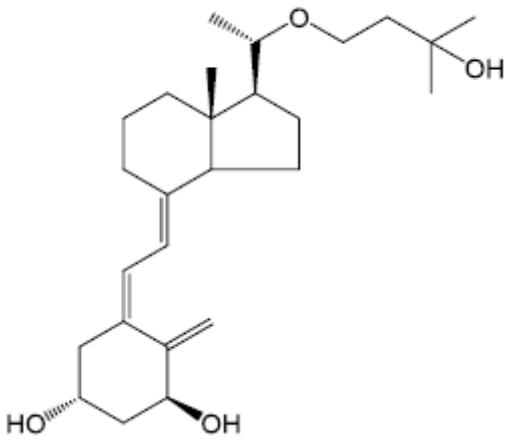
Judge: SUZUKI Chiho

Judge: NISHIMURA Yasuo

(Attachment)

Item List 1

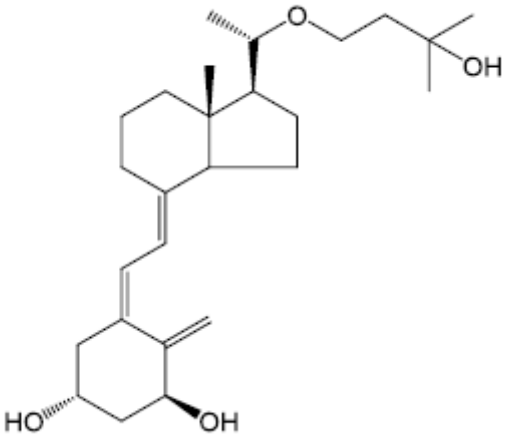
Maxacalcitol active pharmaceutical ingredient prepared by the process for preparation stated in the Process List attached to this judgment (its chemical structural formula is as follows)



(Attachment)

Item List 2

Preparations as stated below of maxacalcitol (its chemical structural formula is as follows) prepared by the process for preparation stated in the Process List attached to this judgment:



(1) The following product name for Defendant Iwaki Seiyaku Co., Ltd.:
Maxacalcitol Ointment 25μg/g "Iwaki"

(2) The following product name for Defendant Takata Pharmaceutical Co., Ltd.:
Maxacalcitol Ointment 25μg/g "Takata"

(3) The following product name for Defendant Pola Pharma Inc.:
Maxacalcitol Ointment 25μg/g "PP"

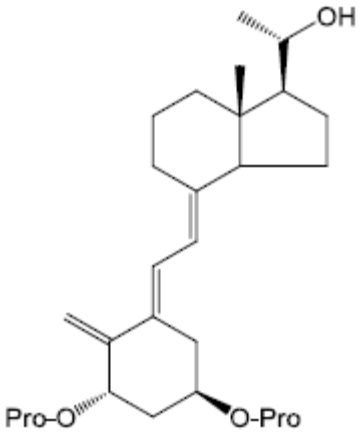
(Attachment)

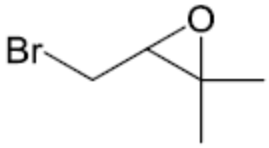
Process List

A process for preparing maxacalcitol comprising the following steps:

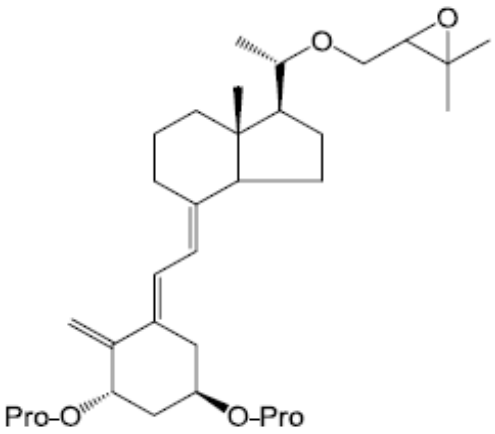
1. (Step I) The step of reacting the following Starting Material A with the following Reagent B in the presence of a base to synthesize the following Intermediate C of an epoxide compound

Starting Material A + Reagent B



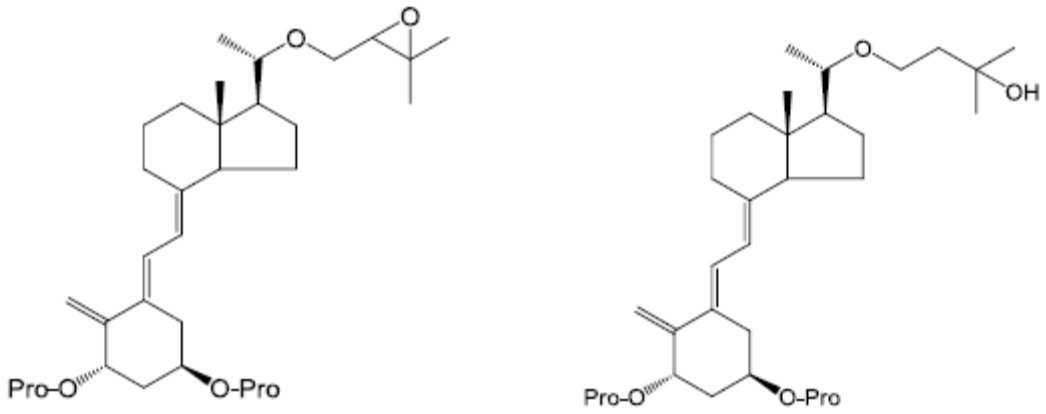


→ Intermediate C



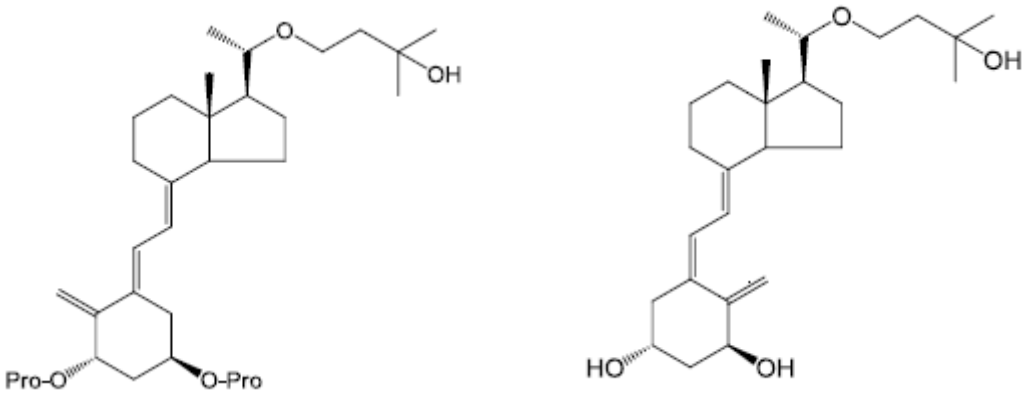
2. (Step II) The step of opening the epoxide ring by treating the following Intermediate C with a reducing agent to obtain the following Substance D

Intermediate C → Substance D



3. (Step III) The step of converting the following trans-form Substance D to a cis form and removing protective groups to obtain maxacalcitol

Substance D → Maxacalcitol



4. (Step IV) The step of recovering the obtained maxacalciol

(Note: In each of the aforementioned structural formulas, Pro means a "protective group.")