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D E C I S I O N
of 8 September 2005

Case Number: T 0482/03 - 3.3.01

Application Number: 96935357.2

Publication Number: 798305

IPC: C07F 9/655

Language of the proceedings: EN

Title of invention:
High-purity tocopherol phosphates, process for the preparation thereof, method for analysis thereof, and cosmetics

Applicant:
SHOWA DENKO KABUSHIKI KAISHA

Opponent:
-

Headword:
Tocopherol/SHOWA DENKO KABUSHIKI KAISHA

Relevant legal provisions:
EPC Art. 54(2), 56, 111(1)

Keyword:
"Main request: novelty (no)"
"Auxiliary request: novelty (yes)"
"Remittal to first instance"

Decisions cited:
-

Catchword:
-

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Case Number: T 0482/03 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 8 September 2005

Appellant: SHOWA DENKO KABUSHIKI KAISHA
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Representative: Strehl Schübel-Hopf & Partner
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Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 2 August 2002 refusing European application No. 96935357.2 pursuant to Article 97(1) EPC.**

Composition of the Board:

Chairman: A. Nuss
Members: P. P. Bracke
S. Perryman

Summary of Facts and Submissions

I. The appeal lies from the Examining Division's decision refusing European patent application No. 96935357.2 due to lack of novelty of the claimed compositions and process over the cited prior art. The following prior art documents were cited in the decision under appeal: documents

(1) English abstract of JP-A-04208209,
(2) WO 93/02661,
(3) EP-A-0 127 471,
(4) US-A-5 053 222,
(5) English abstract of JP-A-62167475,
(6) Khim.-Pharm. Zh., 1983, 17, (7), pages 840 to 844,
(7) Khim.-Pharm. Zh., 1985, 19, (1), pages 75 to 77, and
(8) English abstract of JP-A-59044375.

The set of nine claims underlying the decision under appeal was filed with letter of 20 June 2002 and consisted of claims related to compositions, processes and cosmetics. Claim 1 read:

"1. A composition consisting of at least 97% by weight of tocopheryl phosphate and/or a salt thereof and a P,P'-bistocopheryl diphosphate and/or a salt thereof which is contained in a proportion of not higher than 3% by weight based on the weight."

II. In particular, the Examining Division found that example 1 of document (2) was novelty destroying for the claimed compositions and the claimed process.

III. At the oral proceedings before the Board, which took place on 8 September 2005, the Appellant filed, as an auxiliary request, a set of 2 claims, which read as follows:

"1. A process for producing a highly purified tocopheryl phosphate and/or a salt thereof, wherein a P,P'-bistocopheryl diphosphate and/or a salt thereof is contained in a proportion of not higher than 3% by weight based on the weight, which comprises hydrolyzing under acid condition a mixture of:

a tocopheryl phosphate and/or a salt thereof (i) and
a P,P'-bistocopheryl diphosphate and/or a salt thereof (ii)."

"2. A process for producing a highly purified tocopheryl phosphate and/or a salt thereof, according to claim 1 which comprises the steps of:

reacting a tocopherol with oxyphosphorus trihalide and treating the reaction mixture with an acid or basic aqueous solution to thereby form a tocopheryl phosphate and/or a salt thereof in which a P,P'-bistocopheryl diphosphate and/or a salt thereof formed as a by-product is contained,

hydrolyzing the P,P'-bistocopheryl diphosphate and/or salt thereof under acid condition, and, optionally,

rendering the hydrolyzate neutral or basic under basic condition."

IV. The Appellant submitted that it could not be derived from example 1 of document (2) that the tocopheryl phosphate obtained in step a) contained less than 3% diphosphate. Furthermore, he argued that the subsequent step in that example 1 was not suitable for hydrolysing tocopheryl diphosphate into its monophosphate, as shown in the experimental report filed with letter of 11 December 2002.

Moreover, as a reaction to the Board's provisional opinion, expressed in the annex to the summons to attend oral proceedings, that the disclosures of documents (6) and (7) could be considered to destroy the novelty of the claimed compositions, the Appellant argued, that it was not unambiguously derivable from those documents that the obtained tocopheryl phosphates contained at most 3% by weight of P,P'-bistocopheryl diphosphate.

V. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims filed with letter of 20 June 2002 as a main request or of the claims submitted at oral proceedings on 8 September 2005 as auxiliary request.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1 Article 123(2) EPC

Since the Board came to the conclusion that the main request does not meet the requirement of novelty, it is not necessary to give any reasoning as to whether the requirement of Article 123(2) EPC is met.

2.2 Novelty of Claim 1

Like the present application, also document (7) is concerned with the problem that the reaction of tocopherol with oxyphosphorus trichloride to produce tocopheryl phosphate is accompanied by secondary reactions with the possible formation of *inter alia* P,P'-bistocopheryl diphosphate. As a possible method for the formation of tocopheryl phosphate without contaminants it proposes on page 2 a method wherein tocopherol is phosphorylated with dianiline chlorophosphate and the intermediate then formed is treated with isoamyl nitrite. A specific example of such method is described on page 7, where it is also stated that pure tocopheryl phosphate is isolated by column chromatography.

The Appellant submitted that it could not be directly and unambiguously derived from document (7) that the compositions obtained according to the methods described therein contained less than 3% by weight of P,P'-bistocopheryl diphosphate and/or a salt thereof.

However, since column chromatography is generally known as one of the most powerful methods for the purification of chemical compounds, especially when carrying out small-scale experiments, it must be assumed that the tocopheryl phosphate obtained according to the method described on page 7 of document (7) would contain far less than 3% by weight of P,P'-bistocopheryl diphosphate as impurity.

Thus, document (7) discloses in an unambiguous way compositions embraced within the wording of Claim 1.

2.3 Already for the reason alone that the disclosure of document (7) is novelty destroying for Claim 1, the set of claims according to the main request is not allowable.

3. *Auxiliary request*

3.1 Article 123(2) EPC

Present Claim 1 results from the combination of the product features and the process features of Claims 1 and 6 as originally filed and present Claim 2 results from the combination of the product features and the process features of Claims 1 and 7 as originally filed. As thus additional subject-matter has not been added by the amendments in Claims 1 and 2, the requirement of Article 123(2) EPC is met.

3.2 Novelty of Claims 1 and 2 over document (2)

3.2.1 The essence of the claimed process is that a mixture of a tocopheryl phosphate and/or a salt thereof and a P,P'-bistocopheryl diphosphate and/or a salt thereof is **hydrolysed under acid condition** in order to produce a highly purified tocopheryl phosphate and/or salt thereof, wherein P,P'-bistocopheryl diphosphate and/or a salt thereof is contained in a proportion of not higher than 3% by weight based on the weight.

3.2.2 The Examining Division was of the opinion that such hydrolysis under acid condition was known from example 1 of document (2), since in step c) thereof an hydrolysis step under acid condition is conducted supposedly identical to the one involved in the present application.

3.2.3 Step c) of example 1 in document (2) is concerned with the preparation of a suspension of the phosphate of delta-tocopherol, wherein the disodium salt of tocopheryl phosphate is first converted into its free acid form by reducing the acidity of an aqueous solution of the disodium salt to pH 7 by adding 0.5 N HCl and subsequently to pH 6 by adding 0.1 N HCl before homogenisation.

3.2.4 Although it is true that under hydrolysis the formation of an acid from a salt by interaction with water may be understood, the term hydrolysis is also commonly used for the decomposition of organic compounds by interaction with water (see, for example, Chambers Science and Technology Dictionary, reprinted edition of 1984, page 590).

Thus, the question arises whether the conversion of the disodium salt of tocopheryl phosphate into its free acid form, as described in step c) of example 1 in document (2), may be considered as **an hydrolysis** under acid condition **suitable for converting** P,P'-bistocopheryl diphosphate and/or a salt thereof into tocopheryl phosphate and/or a salt thereof.

3.2.5 According to the present application, hydrolysis under acidic conditions is conducted at acid concentration ranging from 0.5 to 1.1 N and at reaction temperatures of 50°C up to the reflux temperature of the mixture (see page 10, lines 5 to 10, of the published application). From the fact that such conditions are incontestably much more severe than the ones used in step c) of example 1 of document (2), it may be derived that at the conditions of step c) in example 1 of document (2) P,P'-bistocopheryl diphosphate may not be hydrolysed into tocopheryl phosphate.

This finding is confirmed by the experimental report filed with letter of 11 December 2002. This report makes namely clear, that at the acidic conditions as described in step c) of example 1 in document (2) P,P'-bistocopheryl diphosphate is not converted into tocopheryl phosphate.

3.2.6 As thus an hydrolysis suitable for converting P,P'-bistocopheryl diphosphate into tocopheryl phosphate is not described in step c) of example 1 of document (2) and such hydrolysis conditions are not known from any other part thereof, document (2) does not disclose all features of Claim 1 and thus is not novelty destroying for the claimed process.

3.3 Novelty of Claims 1 and 2 over the remaining cited prior art

Since none of documents (1) and (3) to (8) disclose the hydrolysis of P,P'-bistocopheryl diphosphate, none of those documents can be considered to disclose all process features of Claim 1 or 2.

4. Since the contested decision only concerns the novelty of the claimed subject-matter over documents (1) to (8) and having regard to the fact that the function of the Boards of Appeal is primarily to give a judicial decision upon the correctness of the earlier decision taken by the first instance, the Board makes use of its power under Article 111(1) EPC and remits the case to the first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance for further prosecution on the basis of the two claims submitted at oral proceedings on 8 September 2005.

The Registrar: The Chairman:

N. Maslin A. Nuss