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**Datasheet for the decision
of 30 July 2020**

Case Number: T 1961/14 - 3.3.08

Application Number: 01120248.8

Publication Number: 1182261

IPC: C12P13/08

Language of the proceedings: EN

Title of invention:

Method for producing basic amino acid

Patent Proprietor:

Ajinomoto Co., Inc.

Opponent:

Evonik Operations GmbH

Headword:

Main counter ions/AJINOMOTO

Relevant legal provisions:

EPC Art. 100(b), 111(1)

Keyword:

Main request (patent as granted) - sufficiency of disclosure -
(yes)

Remittal to the opposition division - (yes)

Decisions cited:

T 0225/93

Catchword:



Beschwerdekammern

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Case Number: T 1961/14 - 3.3.08

D E C I S I O N
of Technical Board of Appeal 3.3.08
of 30 July 2020

Appellant:
(Patent Proprietor)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted on 4 July 2014
revoking European patent No. 1182261 pursuant to
Article 101(3) (b) EPC.**

Composition of the Board:

Chairman B. Stolz
Members: M. R. Vega Laso
 D. Rogers

Summary of Facts and Submissions

I. The appeal of the patent proprietor (appellant) lies from a decision of an opposition division posted on 4 July 2014, revoking the European patent No. 1 182 261 (application No. 01120248.8) with the title "Method for producing basic amino acid".

II. Claim 1 of the patent as granted reads:

"1. A method for producing a basic amino acid, or fermentation broth or fermentation product containing the basic amino acid by fermentation comprising the step of culturing a microorganism having an ability to produce the basic amino acid in a liquid medium under an aerobic condition to produce and accumulate the basic amino acid in the medium, wherein:
pH of the medium is controlled to be 6.5-9.0 during the culture, and 7.2-9.0 at the end of the culture, and a culture period where 2 g/L or more of hydrogencarbonate ions and/or carbonate ions exist in the medium is secured during the culture by controlling pressure in a fermentation tank to be a positive pressure during the fermentation, or supplying carbon dioxide gas or a mixed gas containing carbon dioxide gas to the medium, so that the hydrogencarbonate ions and/or carbonate ions are utilized as main counter ions of the basic amino acid."

Claims 2 to 6 are directed to various embodiments of the method according to claim 1.

III. The patent was opposed on the grounds for opposition of Article 100(a) in conjunction with Article 56 EPC, and Article 100(b) EPC.

- IV. In the decision under appeal, the opposition division found that Article 100(b) EPC prejudiced the maintenance of the patent as granted (main request), and that the claims according to the auxiliary request did not meet the requirements of Article 84 EPC.
- V. The appellant filed an appeal against the adverse decision and submitted a statement of grounds of appeal together with six sets of claims as its new auxiliary requests I to VI. The patent as granted was maintained as the main request.
- VI. The respondent (opponent) replied to the statement of grounds of appeal.
- VII. Since both parties requested oral proceedings, they were summoned to oral proceedings to be held on 25 March 2020.
- VIII. By letter dated 6 January 2020, the respondent withdrew its request for oral proceedings and informed the board that it would not attend the scheduled oral proceedings.
- IX. Due to the restrictions imposed during the Corona pandemic, the oral proceedings had to be cancelled. They were anew scheduled for 30 July 2020.
- X. In a communication sent in preparation of the oral proceedings, the board expressed a provisional opinion on some procedural and substantive issues relevant to the case.
- XI. In reply to the board's communication, the respondent confirmed that it would not attend the oral

proceedings. The appellant withdrew its request for oral proceedings and requested a decision on the merits of its case. The board cancelled the oral proceedings.

XII. In the present decision, reference is made to the following documents:

(6): W. Crueger and A. Crueger, 1982, Lehrbuch der Angewandten Mikrobiologie, ed. Akademische Verlagsgesellschaft, Wiesbaden, pages 89 and 90;

(14): Experimental data submitted by the patent proprietor under cover of a letter dated 10 July 2012;

(16): Declaration by Masato Ikeda, dated 15 March 2014; and

(17): Certificate of Experimental Results signed by Dr Yuri Nagai, dated 19 March 2014.

XIII. The submissions made by the appellant were essentially as follows:

Main request (patent as granted) - Article 100(b) EPC

The opposition division had erred in finding that the patent as a whole did not provide the technical information required for carrying out the claimed invention. The opposition division had exclusively focussed on the examples and figures of the patent, but had not made a single reference to the additional information contained in the description. Such an approach was not legally correct.

The examples in the patent and the experimental data submitted in opposition proceedings convincingly showed that the gist of the invention, i.e. a fermentative method for basic amino acids wherein hydrogencarbonate and/or carbonate ions are utilized as counter anions, could be achieved. The respondent had not provided convincing evidence that the technical effect could not be achieved.

The facts and circumstances of decision T 225/93 of 13 May 1997, regarding different measuring methods, were not comparable with those of the present case. Contrary to the findings in the decision under appeal, a person skilled in the art learnt from paragraph [0040] of the patent that it was not necessary to add ammonium sulphate or chloride to the culture. The culture medium in Example 2 in the patent did not contain any added chloride salts. Hence, since the skilled person would not have needed any inventive skills to arrive at the solution applied in the experiment "feed medium 1" in document (14), the main request satisfied the requirements of Article 83 EPC.

XIV. The submissions made by the respondent may be summarized as follows:

Main request (patent as granted) - Article 100(b) EPC

The appellant had failed to show that the method according to claim 1 could be reproduced without undue burden by a skilled person using the information provided in the patent. The examples in the patent did not contain enough data and/or information on how the desired result could be achieved, i.e. that the hydrogencarbonate and/or carbonate ions were utilized as main counter ions of the basic amino acid. The

description did not provide any further information, in particular it did not show by which measure the required threshold of 2 g/L of hydrogencarbonate and/or carbonate ions could be maintained for a period or partial period of the culture, not did it disclose how the required threshold could be measured in the culture broth.

As an optional measure for performing the method according to claim 1, the patent disclosed the reduction of the sulphate and chloride ions. However, it was not mentioned to which extent those ions needed to be reduced in order for the hydrogencarbonate and/or carbonate ions to become the main counter ions of the basic amino acid.

None of the examples in the description provided any data, e.g. all quantities of salts added to the culture broth, concentrations of all ions or an ion balance, enabling the indirect determination of the concentration of hydrogencarbonate and carbonate applying the electroneutrality principle. The description did not mention any analytical methods for measuring the molar concentrations of anions, in particular chloride or sulphate, or cations. While the electronegativity principle may be considered as belonging to the common general knowledge, since the description, including the examples, did not contain sufficient data enabling the application of the principle, and since the method was not mentioned as such, the patent did not teach the application of the principle in order to indirectly determine the hydrogencarbonate/carbonate concentration in the culture medium.

Document (14), which included additional experimental data, did not provide any hint to the use of the principle of electroneutrality in order to determine the normality ratios. As regards the experimental data provided in document (17), which in fact allowed to determine the normality ratios, it was doubtful whether the hydrogencarbonate/carbonate ions could actually be considered as the main counter ions of the basic amino acid, since their normality ratio was 49.3%, whereas that of the chloride/sulphate ions was 48%. The difference was not significant.

The experimental evidence submitted by the appellant showed that the skilled person had to perform further experiments in order to learn which exact conditions needed to be chosen for achieving the result specified in claim 1, i.e. that the hydrogencarbonate/carbonate ions were the main counter ions of the basic amino acid.

- XV. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted or based on any of the auxiliary requests I to VI submitted together with the statement of grounds of appeal. Further, the appellant requested that, if the decision under appeal were set aside, the case be remitted to the opposition division for examination of inventive step.
- XVI. The respondent (opponent) requested that the appeal be dismissed.

Reasons for the Decision

Main request (patent as granted) - Article 100(b) EPC

1. In the decision under appeal, the opposition division found that "... *the examples and the additional information in the description are not suitable to instruct the skilled person how to carry out the invention over the whole scope*" (see section 2.3.4 of the decision).
2. In appeal, the appellant did not contest the opposition division's finding that neither Example 1 nor Example 2 of the patent disclose a method as claimed, in particular a method in which "... *the hydrogencarbonate ions and/or carbonate ions are utilized as **main** counter ions of the basic amino acid*" (emphasis added by the board). The appellant argued, however, that the opposition division had failed to consider the disclosure in the patent as a whole.
3. In fact, while the disclosure in the examples of the patent is discussed extensively, it is not apparent from the decision under appeal which "*additional information in the description*" was considered by the opposition division in order to arrive at the conclusion that the disclosure in the patent was insufficient within the meaning of Article 100(b) EPC.
4. Paragraphs [0032] to [0042] of the patent description relate to a method for producing a basic amino acid in which hydrogencarbonate and/or carbonate ions are used as the main counter ions of the basic amino acid (see, in particular, paragraph [0032]). In the board's judgement, when reading these paragraphs a person

skilled in the art learns that, according to the invention, the pH of the culture medium needs to be controlled within certain ranges during and at the end of the culture (see first sentence in paragraph [0033]), and that the pH of the medium affects the chemical equilibrium between hydrogencarbonate and carbonate ions. The latter is said to become dominant when the pH is increased and be more effective as a counter ion (see first sentence in paragraph [0034]). The use of ammonia to control the pH is mentioned in the same paragraph.

5. Further, it is disclosed in the patent that for a period of the culture - preferably from logarithmic phase to stationary phase - the culture medium must contain 2 g/L hydrogencarbonate and/or carbonate ions (see paragraph [0033], from the second sentence to the end of the paragraph). For that purpose, the patent teaches to dissolve carbon dioxide gas, which can be either produced during fermentation or introduced by bubbling the broth with pure carbon dioxide gas or a mixed gas containing 5 volume% or more of CO₂, in the broth by applying a positive pressure in the fermentation tank (see paragraphs [0035], [0036] and [0040], in particular the passage on column 9, lines 30 to 35). It is well-known in the art that hydrogencarbonate and/or carbonate ions are formed when carbon dioxide is dissolved in water, which is the solvent generally used for culture broths.
6. As regards the amount of sulphate and/or chloride ions in the culture medium, it is disclosed in the patent that:

"... according to the invention, it is not necessary to add sulphate ions or chloride ions

exceeding their amounts necessary for the growth of the microorganism. Preferably, a suitable amount of ammonium sulphate or the like is fed to the medium in an early stage of the culture, and the feeding is stopped during the culture" (see column 9, lines 35 to 41)

Hence, contrary to the opposition division's view, a person skilled in the art learns from the patent that, according to the invention, sulphate or chloride ions are not required as the counter ions for the produced amino acid, but are added only in small amounts in order to satisfy the nutritional requirements of the microorganism.

7. In view of the above, the decisive question is whether or not the skilled person, relying on the technical information provided in paragraphs [0032] to [0042] of the description supplemented with the common general knowledge at the priority date, could perform the claimed method without undue burden of experimentation and without needing inventive skill.
8. Even though some experimentation may be necessary in order to determine empirically which positive pressure in the fermentation tank within the range disclosed in the patent (see column 8, lines 36 and 37) results in the required amount of hydrogencarbonate and/or carbonate ions in the medium during the fermentation, performing the required experimentation is within the normal skills of the nominal person skilled in the art, who in the present case is a chemical engineer with experience in the field of microbial fermentation technology, in particular for the production of amino acids. Moreover, the board considers that the required experimental effort does not represent an undue burden.

9. In the decision under appeal, the opposition division considered the disclosure in the patent to be insufficient also as regards the methods for determining the amount of hydrogencarbonate and carbonate ions in the culture medium (see section 2.5.4 of the decision). It is undisputed that the patent does not disclose any analytical methods for determining the amount of hydrogencarbonate and/or carbonate ions in the culture medium. Such methods are required not only for assessing whether those ions are the main counter ions of the basic amino acid, but also to ascertain that, at least for a certain culture period, the medium contains 2 g/L hydrogencarbonate and/or carbonate ions, as required in claim 1.

10. The opposition division referred to documents (16) and (6) as evidence that different analytical methods known in the art at the relevant date did not always lead to the same result. Referring to decision T 225/93 of 13 May 1997, the opposition division concluded that the determination of the amount of hydrogencarbonate and/or carbonate ions "*... amounts in fact to an undue burden*".

11. In the board's view, the evidence on which the opposition division relied does not support its adverse finding on sufficiency of disclosure. The statement in the declaration by Prof. Ikeda (document (16)) on which the opposition division appears to rely, reads:

"Since the methods of determining ions mentioned above are very exact and the analytic determination of carbonate and hydrogencarbonate is not as simple and exact, the calculation using the principle of electroneutrality is the most straightforward and

exact method for a skilled person." (see page 3, lines 21 to 24 of document (16))

12. Unlike the opposition division, the board is unable to derive from this statement that various methods for measuring the amount of hydrogencarbonate and/or carbonate in a solution known at the relevant date "*... do not always lead to the same result ...*". In this passage of his declaration Prof. Ikeda merely stated that, compared to the analytical determination of **other** ions in the culture medium (e.g. ammonium or organic acids), the determination of hydrogencarbonate and carbonate ions is less simple and exact.
13. In document (6), on which the opposition division also relied, reference is made to mass spectrometry for measuring various gases (see page 90, right-hand column), in particular CO₂, but there is no indication whatsoever to the effect that different methods for measuring the amount of hydrogencarbonate and/or carbonate ions render different results. Hence, the circumstances of the present case differ from those in decision T 225/93 (*supra*).
14. In appeal proceedings, the respondent acknowledged that the principle of electroneutrality and its application belonged to the common general knowledge of a person skilled in the art at the relevant date (see reply to the statement of grounds of appeal, page 4, first sentence of the second full paragraph). However, it argued that the patent did not contain enough data enabling the application of the principle, and that the method as such was not mentioned therein.
15. These arguments fail to convince the board. According to established case law, common general knowledge is

knowledge that a skilled person in the field in question (in the present case the field of microbial fermentation technology) is expected to have, or at least to be aware of, to the extent that he/she knows he/she could look it up in a book if it was needed. Hence, even though the principle of electroneutrality is not mentioned in the patent, the skilled person would be aware of this principle and its application for determining the amount of hydrogencarbonate and/or carbonate ions in any culture medium.

16. Concerning the allegedly missing data in the examples of the patent, which the respondent considered to be required for applying the principle, the board remarks that, as the information in the description supplemented with the common general knowledge enables the skilled person to carry out the invention without undue burden, he/she does not need to repeat the experiments in the examples.
17. In opposition proceedings, the present respondent argued repeatedly that the invention cannot be carried out over the whole scope of the claims. However, other than making inferences from the examples of the patent, it did not put forward any actual experimental evidence supporting its objection. In contrast, the patent proprietor (the present appellant) submitted experimental evidence in documents (14) and (17).
18. The opposition division acknowledged that the experiment "feed medium 1" in document (14) filed by the patent proprietor showed that it was possible to carry out a method as claimed using the hydrogencarbonate and/or carbonate ions as the main counter ions of the basic amino acid (see section 2.6.6 of the decision under appeal). However, it denied that

a person skilled in the art could arrive at the conditions in the "feed medium 1" experiment without inventive effort. In particular, the opposition division argued that there was "... *no hint in the patent specification that no ammonium chloride should be fed during the fermentation process*".

19. The opposition division's argument is not tenable in view of the disclosure in the passage in column 9, lines 35 to 41 of the patent (see quotation in paragraph 6 above).
20. In view of the above, there are no serious doubts substantiated by verifiable facts that a person skilled in the art would be able carry out the invention without undue burden and/or inventive skill. Hence, sufficiency of disclosure of the claimed invention is to be acknowledged. Consequently, the ground for opposition of Article 100(b) EPC does not prejudice the maintenance of the patent in the granted form.

Remittal to the opposition division

21. In the decision under appeal, the opposition division only dealt with the ground for opposition of Article 100(b) EPC. Neither in the decision nor in the communication attached to the summons to oral proceedings did the opposition division express any opinion on the opponent's objection of lack of inventive step (Article 100(a) in conjunction with Article 56 EPC).
22. A ruling on the issue of inventive step by the board for the first time in appeal proceedings would run contrary to the primary object of the appeal proceedings which is to review the decision under

appeal in a judicial manner (Article 12(2) of the Rules of Procedure of the Boards of Appeal as in force from 1 January 2020 - RPBA 2020 -).

23. The board is persuaded that, in view of the circumstances outlined above the requirement of "special reasons" for remittal of the case to the opposition division (Article 11 RPBA 2020) is met. Hence, in accordance with Article 111(1), second sentence EPC the board decides to remit the case to the opposition division for examination of the ground for opposition of Article 100(a) in conjunction with Article 56 EPC, based on the claims and the description of the patent as granted.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the opposition division for examination of the ground for opposition of Article 100(a) in conjunction with Article 56 EPC.

The Registrar:

The Chairman:



L. Malécot-Grob

B. Stolz

Decision electronically authenticated