

Internal distribution code:

- (A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

**Datasheet for the decision
of 11 September 2013**

Case Number: T 2272/09 - 3.3.02
Application Number: 03708150.2
Publication Number: 1483393
IPC: C12P13/04, C12P13/08, C12N1/21,
C12N15/11, C12N15/60
Language of the proceedings: EN

Title of invention:

PROCESS FOR THE PREPARATION OF L-AMINO ACIDS USING STRAINS OF
THE FAMILY ENTEROBACTERIACEAE

Applicant:

Evonik Degussa GmbH

Headword:

L-threonine production/EVONIK DEGUSSA

Relevant legal provisions:

EPC Art. 84

Keyword:

Claims - clarity - main request (no) - clarity - auxiliary
request (no)

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2272/09 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 11 September 2013

Appellant: Evonik Degussa GmbH
(Applicant) Rellinghauser Strasse 1-11
45128 Essen (DE)

Representative: Bender, Heiko
Evonik Degussa GmbH
DG-IPM-PAT
Postcode 84/339
Rodenbacher Chaussee 4
63457 Hanau (DE)

Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 10 July 2009
refusing European patent application No.
03708150.2 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: U. Oswald
Members: T. Sommerfeld
L. Bühler

Summary of Facts and Submissions

- I. The appeal lies from the decision of the examining division pronounced on 12 May 2009 and posted on 10 July 2009, in which the European patent application was refused on the basis of Article 97(2) EPC.
- II. The examining division decided that the main request lacked novelty over documents (1) (Allison et al. 1998, Biochem. J. 256: 741-749), (2) (Nemeria et al. 1999, FASEB Journal 13: A1349) and (3) (Schulze et al. 1992, Biochimica et Biophysica Acta 1120: 87-96) and that the auxiliary request did not meet the requirements of Articles 84, 83 and 56 EPC.
- III. The applicant, who is the appellant, lodged an appeal against the decision of the examining division, requesting that the decision be set aside and that a patent be granted according to the main claim request which had been considered by the examining division. With the statement of the grounds of appeal, documents A1 through A6 were filed.
- IV. In reply to the summons to oral proceedings before the Boards of Appeal, the appellant re-submitted as the main request the claims of the main request on which the contested decision had been based and filed an auxiliary request.

Claims 1 and 6 of the main request read:

"1. A process for the production of L-threonine, characterized in that the following steps are carried out:

- a) fermentation of microorganisms of the family Enterobacteriaceae which produce L-threonine and in which one or more genes selected from the group consisting of *lpd*, *aceE* and *aceF* and alleles of the genes which result from the degeneracy of the genetic code is (are) overexpressed, whereby overexpression is achieved in microorganisms which already produce L-threonine,
- b) enrichment of the L-threonine in the medium or in the cells of the microorganisms, and
- c) isolation of the L-threonine."

"6. L-threonine-producing microorganisms of the family Enterobacteriaceae, especially of the genus *Escherichia*, in which one or more genes selected from the group consisting of *lpd*, *aceE* and *aceF* and alleles of the genes which result from the degeneracy of the genetic code or from neutral sense mutations is (are) present in overexpressed form, whereby overexpression is achieved in microorganisms which already produce L-threonine."

The auxiliary request differs from the main request in that claim 6 has been deleted.

V. Oral proceedings took place on 11 September 2013. During oral proceedings, the main and auxiliary requests were discussed. The appellant did not wish to submit more requests.

VI. The following documents are cited in this decision:

(A1) Mateos et al. 1987, *Mol. Gen. Genet.* 206: 361-367
(first page)

- (A2) Miwa et al. 1983, Agric. Biol. Chem. 47: 2329-2334
(first page)
- (A3) Sugita et al. 1987, Gene 57: 151-158 (pages 151
and 152)
- (A4) Debakov 2003, Advances in Biochemical Engineering
79: 113-136
- (A5) Schlegel 1992, Allgemeine Mikrobiologie 7th
edition; pages 274, 275, 358-361

VII. The appellant's arguments, in so far as relevant to the present decision, can be summarized as follows:

The functional feature "microorganism which already produces L-threonine" was clear to the skilled person, who would be able to distinguish between L-threonine which results from biosynthesis and production of L-threonine. This distinction was also apparent in documents A1 (page 361, Introduction, first sentence; and right column, 4th paragraph, first sentence), A2 (page 2329, left column, first sentence and lines 9 to 10), A3 (page 151, right column, first sentence; and page 152, left column, first paragraph), A4 (Figure 1 on page 115; page 114, section 2.1; page 120, section 4. "Creation of L-threonine producers"; and page 121, first paragraph, last lines), and A5 (page 274, section 7.6; and page 359, section 10.3), which also distinguished between biosynthesis of L-threonine and construction of L-threonine producing strains. To obtain L-threonine producing strains, wild-type strains were mutagenized and the resulting mutants were then tested for L-threonine production. Since the invention was directed to industrial production of L-threonine, only those strains which did produce L-threonine would be considered by the skilled person, as the method required that a product could be obtained. The experimental data submitted during proceedings before

the first instance had also shown that not all Enterobacteriaceae strains produced L-threonine.

VIII. The appellant requests that the decision of the examining division be set aside and that a patent be granted on the basis of the main request or of the auxiliary request, both filed with the letter dated 9 August 2013.

Reasons for the Decision

1. The appeal is admissible.

Main request - Article 84 EPC

2. Article 84 EPC requires the claims to define the matter for which protection is sought and to be clear and concise and supported by the description.
3. In the appealed decision, the examining division considered that the feature "microorganism which already produces L-threonine" lacked clarity because it did not have a standard and precise meaning.
4. The appellant argued that the skilled person would be able to distinguish microorganisms which produce L-threonine as part of their biosynthesis, and solely for their own use, from those microorganisms which can be used as L-threonine producers: only these latter ones would fall within the group defined by the functional feature "microorganism which already produces L-threonine". This feature would thus clearly distinguish between production and biosynthesis of amino acids.

5. The board cannot follow this argument. Nowhere in the application is there a specific definition of the above-mentioned feature "microorganism which already produces L-threonine". The normal meaning of the term "production", in the context of substances endogenously produced by organisms, does not distinguish between production for the organism's own metabolism and production for any other purpose; nor does it allow distinction between low or high production: the organism either produces a given substance or does not produce it. Consequently, this feature has to be read as referring to any microorganisms which produce/ synthesize L-threonine, whether in the context of simple amino acid biosynthesis or in any other context.

6. In support of his argument, the appellant referred to documents A1 through A5. According to the appellant all these documents made clear that there is a distinction between amino acid biosynthesis and production. The designations "construction of amino acid overproducing strains" (A1, right column, lines 29 to 30), "threonine producing mutants" and "improved L-threonine producing strains" (A2, left column, lines 9 and 10 and line 21), "threonine producing strains" (A3, page 152, left column, line 5; A4, page 121, lines 11 and 12), and "L-threonine producers" (A4, page 120, line 31) referred to strains in which L-threonine production is enhanced: such strains, in contrast to wild-type strains, may thus be used for the industrial production of L-threonine. Clearly these are the strains that the skilled person would consider in the context of the invention, since use of other strains would not result in the obtaining of the product.

7. It is established jurisprudence of the Boards of Appeal that the skilled person, when considering a claim,

should rule out interpretations which are illogical or which do not make technical sense. However, this jurisprudence does not require that a broad but technically meaningful term be interpreted more narrowly in accordance with the subjective understanding of the applicant. In the present case, the discussed feature comprises the term "produce" and not "overproduce": all that is required is L-threonine production, not L-threonine overproduction or enhanced/increased production of L-threonine. Even if in the above-mentioned prior art these terms may have been used interchangeably, there is nothing in the application which would support that the broad term "produce" should be restricted in interpretation to the narrower term "overproduce".

8. In this respect, it is noted that documents A1 through A5 (supra) do not provide a standard definition of this term either: instead they support the general knowledge that L-threonine is produced through amino acid biosynthesis. According to these documents, enhancement of L-threonine production can be achieved by manipulation of said biosynthetic pathway, e.g. by overexpressing genes which are directly involved in threonine biosynthesis or by mutating genes which lead to reduced feedback inhibition by L-threonine. However, it is not apparent how suitable strains that "(over)produce" L-threonine are to be objectively identified: what amounts/concentrations of L-threonine should be produced in order for a given strain to belong to the group of suitable strains? The board agrees that the skilled person would be able in most cases to establish whether a given microorganism produces L-threonine in sufficient amounts to be used in processes for the industrial production of amino acids. This however is not what is

claimed. In order to clearly define the subject-matter of the claims, it is necessary to know what is the lower limit of L-threonine production which is required for a strain to fall within the claim scope, but that lower limit is not defined either by the application or by the available prior art.

9. The appellant further argued that not all Enterobacteriaceae strains produce L-threonine, as had been shown by the experimental evidence submitted during the proceedings before the first instance: as such it was indeed possible to distinguish strains that did produce L-threonine from those that did not. This argument is again directed towards a distinction between L-threonine biosynthesis, which regularly takes place in microorganisms, and L-threonine overproduction. Indeed the above-mentioned experimental evidence measured L-threonine present in the fermentation broth rather than L-threonine present within the cells of the microorganisms: as such, it may confirm absence of L-threonine overproduction but not absence of any L-threonine production at all. The board is thus not convinced by this argument either.

10. For these reasons, the board concludes that claims 1 and 6 of the main request do not clearly define the matter for which protection is sought, because they do not provide the exact distinctions which delimit the scope of the claims. Accordingly, the main request does not fulfil the requirements of Article 84 EPC.

Auxiliary request - Article 84 EPC

11. Claim 1 of the auxiliary request is identical to claim 1 of the main request. Therefore, the reasons given for the main request also apply to this request.

Accordingly, the auxiliary request does not meet the requirements of Article 84 EPC either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



N. Maslin

U. Oswald

Decision electronically authenticated