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D E C I S I O N
of 18 August 1998

Case Number: T 0098/95 - 3.3.4

Application Number: 89106729.0

Publication Number: 0338452

IPC: A21D 8/04

Language of the proceedings: EN

Title of invention:

A method of improving the properties of dough and the quality of bread

Patentee:

Gist-Brocades N.V.

Opponent:

Novo Nordisk A/S

Headword:

Improving the properties of dough/GIST BROCADES

Relevant legal provisions:

EPC Art. 54, 111(1)
EPC R. 57a

Keyword:

"Main request - novelty (yes)"
"New use claim - allowable"
"Remittal to the first instance (yes)"

Decisions cited:

G 0001/92

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0098/95 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 2.2.4
of 18 August 1998

Appellant: Gist-Brocades N.V.
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Respondent: Novo Nordisk A/S
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Decision under appeal: Decision of the Opposition Division of the European Patent Office posted 5 December 1994 revoking European patent No. 0 338 452 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: U. M. Kinkeldey

Members: D. D. Harkness

W. Moser

Summary of Facts and Submissions

- I. European patent No. 0 338 452 relating to "A method of improving the properties of dough and the quality of bread" was granted with 12 claims of which claim 1 reads as follows:
- "1. A method of improving the properties of dough and the quality of the baked product, characterised by adding to the dough, dough ingredients, ingredient mixture or dough additives or additive mixture an enzyme preparation comprising:
- (1) hemicellulose and/or cellulose degrading enzymes and glucose oxidase or
 - (2) hemicellulose and/or cellulose degrading enzymes, sulfhydryl oxidase and glucose oxidase."
- II. An opposition was filed by the respondent (opponent) on the grounds that the subject-matter was not novel and inventive and that the disclosure was not sufficiently clear and complete for the invention to be carried out by a skilled person, Article 100(a) and (b) EPC.
- III. During the opposition procedure the insufficiency objection was withdrawn; however the patent was revoked under Article 102(1) EPC for lack of novelty.
- IV. The following documents have inter alia been cited:
- (2) US-A-2 783 150

- (3) EP-A-0 321 811
- (4) Miles Technical Information DEEO - A Glucose oxidase and Catalase enzyme system, 1980
- (11) WO 84/01694
- (18) Derwent Abstract J 57086235A
- (18A) Japanese patent application J 57086235A (18)
- (18B) English translation of document (18A)
- (19) Novo report on the reproduction of document (2).
- (22) German patent DBP 1 050 703
- (24) Yamamoto et al., Nippon Shokuhin Kogyo Gakkaishi vol. 28, No. 9, 496-501; (1981)
- (25A) Goel S. K. and Wood J. B., Journal of Food Technology 13, 243-247 (1978)

V. The appellant (patentee) filed an appeal, paid the appeal fee and submitted a statement setting out the grounds of appeal.

With a letter received on 18 May 1998, the appellant filed a new main request plus four auxiliary requests. A fifth auxiliary request was filed on 17 July 1998. These requests replaced all previously filed requests.

VI. The respondent filed submissions in support of its

position that the appeal has to be dismissed.

VII. At oral proceedings the appellant filed a new main request having eleven claims of which the independent claims 1, 9 and 11 read as follows:

"1. A method of improving the properties of a flour dough and the quality of the baked product by adding to the dough, dough ingredients, ingredient mixture or dough additives or additive mixture, an enzyme preparation comprising glucose oxidase, characterised in that said enzyme preparation additionally provides per kg of flour at least 10 units of hemicellulase and/or at least 10 units of cellulase."

"9. A pre-mixture useful in baking which comprises flour as the carrier in admixture with an enzyme preparation for improving the properties of the dough comprising glucose oxidase, characterised in that said enzyme preparation additionally provides per kg of flour at least 10 units of hemicellulase and/or at least 10 units of cellulase."

"11. Use of a pre-mixture in baking, said pre-mixture comprising a carrier in admixture with an enzyme preparation for improving the properties of the dough comprising glucose oxidase, characterised in that said enzyme preparation additionally provides per kg of flour at least 10 units of hemicellulase and/or at least 10 units of [hemi]cellulase." [sic!]

VIII. The arguments of the appellant at oral proceedings concerning his new main request can be summarised as

follows:

The subject-matter of the claims of the new main request complied with Article 123(2) EPC as it was based on the disclosure on pages 5 and 6, the examples, and in claims 1 and 3 of the European patent application as filed.

In view of the restriction to a content of flour in the premix composition according to claim 9 necessitated by document (11), the appellant introduced the "use" claim 11 directed to the use in baking of the pre-mixtures as originally claimed. There was no reason for the appellant to relinquish the "use" of said pre-mixtures which fell within the scope of claim 9 in view of a citation which did not make reference to such a use. Accordingly, there was no valid objection under Rule 57a EPC.

The appellant objected to the admission of late filed documents (28) and (28A) which were filed to support document (22), because they were not sufficiently relevant. They were not a true repetition of document (22), since pages 1 and 2 of document (28A) were not linked with documents (22) and (28) which required experimentation on an unbelievable scale.

There was no protocol and no proper experimental results for the disclosure in document (2) which related in column 1 to gluconic acid metal complexes and not to glucose oxydase (GOX). Thus document (19) which analysed an A.niger strain NRRL3 to show that document (2) employed a mixture of GOX, hemicellulase

and cellulase was not supportive. The affidavit of Dr J H Hunik confirmed the analysis of A.niger fermentation experiments by Blom et al in 1952, which indicated low levels of cellulase and hemicellulase. The affidavit of Dr D Scott who had not accepted the accuracy of the Blom experimentation was not convincing because he did not provide any published evidence to the contrary. Further, the work of Dr Scott was not repeatable.

None of the cited documents disclosed the minimum requirement of at least 10 units of cellulase or hemicellulase and therefore no novelty objection could be based on them.

IX. The respondent's submissions at the oral proceedings as regards the new main request can be summarised as follows:

Claim 1 of the new main request did not meet the requirements of Article 123(2) EPC because there was no disclosure in the European patent application as filed of the combination of 10 units of cellulase and hemicellulase with an unlimited quantity of GOX. The respondent agreed that there was no objection to the term "at least" and that the subject-matter of the claims of the new main request complied with the requirements of Article 84 EPC.

He objected under Rule 57a EPC to claim 11 which had been introduced without good reason as it would have been possible to amend the existing claim 9 to meet the objection.

The respondent cited documents (2), (3), (18, 18A, 18B) and (22) as being novelty destroying for the subject-matter claimed.

Document (18) referred to a composition used in baking and containing an improver having a small amount of an ingredient koji. This koji had been analysed prior to the publication date of document (18) and shown to contain hemicellulase and cellulase in results described in documents (24) and (25A).

The other citations were said to anticipate under Article 54 EPC but did not disclose directly all the necessary ingredients. Each of these documents was supported by written evidence filed during these proceedings, document (2) by document (19), document (3) by affidavits and document (22) by documents (28) and (28A).

The disclosure of document (22) was directed to the skilled person who would use his expertise to get a preparation useful for baking. This disclosure led to a concentrate of GOX plus other enzymes. *Aspergillus niger* from NRRL-B was an acceptable source agreed by the parties and it could be fermented in various culture media, however, there was not a specific classical media to be used. Document (28) showed that irrespective of the medium used, the product GOX obtained in accordance with document (22) contained significant quantities of hemicellulase, and document (28A) likewise demonstrated the presence of cellulase.

Document (2) related to a process for improving dough strength and handling qualities and employed a commercial GOX composition obtained from *A.niger*, which composition contained minor amounts of other enzymes. The conclusion drawn by document (19) was that enzyme extracts obtained from a gluconic acid producing strain of *A.niger* available at the priority date of the patent in suit cultivated in accordance with document (2) were found to contain glucose oxidase, hemicellulase, cellulase and sulfhydryl oxidase in activities within the process claimed. It was shown in document (19) that trace amounts of enzymes referred to in document (2) may have been above or below the minimum 10 units required by the claims of the new main request.

According to the expert Dr D Scott the affidavit from Dr Hunik was in error in that he relied upon the Blom et al. method for *A.niger* fermentation to produce GOX, but it was the aim of Blom et al. to produce sodium gluconate.

- X. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of:
- (a) **main** request: claims 1 to 11 submitted during oral proceedings; or
 - (b) **first** auxiliary request: claims 1 to 8 filed on 18 May 1998 as second auxiliary request; or
 - (c) **second** auxiliary request: claims 1 to 8 filed on 18 May 1998 as third auxiliary request; or

(d) **third** auxiliary request: claims 1 to 6 filed on 18 May 1998 as fourth auxiliary request; or

(e) **fourth** auxiliary request: claims 1 to 6 filed on 17 July 1998 as fifth auxiliary request.

XI. The respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. *Procedural matter*

Documents (28) and (28A) were filed at a very late stage. In the Board's view they prima facie are not sufficiently relevant to support the disclosure of document (22) and are, therefore, not accepted into the proceedings under Article 114(2) EPC.

Main request

3. *Article 123(2) EPC*

Because the disclosure in the European patent application as filed (see page 5, last paragraph, page 6, last paragraph of the description, and claim 3) shows that the GOX may be employed in any amount with the claimed minimum of cellulase and hemicellulase, the subject-matter of all of the claims of the main request complies with Article 123(2) EPC.

4. *Article 123(3) EPC*

The main claim as granted was unrestricted in terms of the amounts of the respective ingredients employed in the process and the amendments made are of a limiting nature based upon the granted claim 3, and therefore Article 123(3) EPC has also been complied with.

5. *Clarity, Article 84 EPC*

The Board did not see any reason to question the clarity of the claims of the main request and no objection was raised by the respondent in this respect. The requirement of Article 84 EPC is met.

6. *Amendments, Rule 57a EPC*

This rule stipulates that an amendment may be made to the description, claims or drawings of a European patent provided that it was occasioned by grounds for opposition specified in Article 100 EPC.

The amendment made to claim 9 relating to a pre-mixture was necessitated by document (11) which discloses a composition which, however, is not used for baking. Thus, the amendment to include flour met the novelty objection raised in view of that composition. A claim to a composition encompasses the use of such a composition, which use in this case was not anticipated. In the present case, the appellant would be disadvantaged if the new use claim is not allowed. It is therefore in keeping with Rule 57a EPC that the appellant be allowed to file a use claim, i. e.

claim 11, directed to baking equivalent to that which was implicit in the unamended claim 9. On the other hand, such an amendment does not contravene Article 123(2) and (3) EPC, either.

7. *Novelty, Article 54 EPC*

7.1 During the oral proceedings the respondent cited documents (2), (3), (18) and (22) as novelty destroying.

7.2 The disclosure of document (18) published on 29 May 1982 (supported by documents (18A), (18B), (24) (1981) relating to hemicellulase, and (25A) (1978) relating to cellulase) referred to koji as a constituent of the improver in a baking dough. The corroborating evidence was acceptable in this instance because koji was known to be present in the dough according to document (18) and may be analysed to determine its constituents (see decision of EBA G 1/92 (OJ EPO 1993, 277)). However, the respondent did not provide any conclusive calculation to show that the levels of cellulase and hemicellulase required by the process of the patent in suit according to the new main request were present in the small amount of koji used in the example of document (18). This disclosure does not affect the novelty of the subject-matter of claim 1 because there was far too little of it present.

7.3 Such a direct link as the one existing between document (18) and its supporting documents is not to be found between the disclosure of document (2) and its supporting document (19).

The disclosure of document (2) relates to a process in which glucose oxidase is mixed with a wheat flour to improve dough forming characteristics, however there is no mention of cellulase or of hemicellulase in document (2). The respondent resorted to technical evidence to show that at the priority date of the patent in suit the GOX used in the process of document (2) would have contained such ingredients.

In order to do this, samples of A.niger were fermented and results obtained and filed as document (19).

At oral proceedings there was much discussion as to what is obtained when A.niger is fermented. The source of A.niger and the media for fermentation largely determine what is obtained. However, many media are possible, and those involved in this art have the tendency to make use of their own preferred formula for consistent results. The experts Dr D Scott and Dr Hunik disputed what was done in document (2), the former referring to GOX (see document (2), claim 1) and the latter to "metallic gluconate" (see document (2), column 1, line 61). No conclusive indications may be drawn from this contradiction.

Therefore, there is not a direct link between the glucose oxidase compositions of document (2) and the analysis in document (19) of a prior art A.niger strain, which, according to the analysis, contains glucose oxidase, hemicellulase, cellulase and sulfhydryl oxidase in quantities used in the patent in suit. Indeed, in document (2) not a single commercial product has been identified by name; therefore, the

analysis according to document (19) has been effected ex post facto. Further, in paragraph 1.1.3 of the respondent's letter, filed on 22 February 1996, it is stated that, according to an external expert opinion, a gluconic acid producing strain of A.niger **was one of the strains of choice at the effective date of document (2)**. However, in the Board's judgement, that statement is by no means sufficient to prove that what has now been analysed is the glucose oxidase of document (2).

Thus, the Board has to come to the conclusion that the analysis of A.niger fermentations carried out by the respondent as set out in document (19), in order to corroborate the teaching of document (2) cited in view of an Article 54 EPC objection, did not directly correspond with that fermentation actually made at the time of the document (2) prior art disclosure.

From the above it follows therefore that the subject-matter of claim 1 is not anticipated by document (2).

- 7.4 A similar situation arose with document (3) and the affidavits from Kalum and Hjorkjaer. Kalum analysed SP 358 batch OKN 0016 which was shown to contain glucose oxidase, cellulase, xylanase and sulphhydryl oxidase. There is no mention of this in document (3), which used compositions containing glucose oxidase, sulphhydryl oxidase and optionally catalase. The enzyme activities of A.niger which were measured in document (3) on page 6 did not disclose hemicellulase or cellulase using the same analysis methods. Again, this is not a sustainable novelty objection because there exists no direct link

between document (3) and the supporting evidence.

7.5 Also document (22) relates to a process for improving the baking characteristics of flour or dough by employing a GOX composition to enhance the activity of acids commonly used in baking. Again, the respondent attempted to show by experiments disclosed in document (28), filed on 6 August 1998, and document (28A), filed during oral proceedings, that the *A.niger* used in document (22) to produce GOX provided those ingredients essential for the process of the patent in suit. Since the same situation arises as has been explained in respect of document (2), ie that there is no direct link between documents (22) and (28) or (28A), the Board considered documents (28) and (28A) to be not sufficiently relevant and late filed, and invoked its power under Article 114(2) EPC not to accept them. The novelty objection based on document (22) therefore fails.

7.6 When asked by the chairwoman whether any other novelty objection in respect of the subject-matter of the two further independent claims, being product claim 9 and use claim 11 of the main request, were to be considered, the respondent did not raise any objection. In the Board's opinion the subject-matter of claim 9 is distinguished from the only relevant document (11) by a reference to flour as indicated in paragraph 5 (supra), and use claim 11 is distinguished and characterised as is claim 1 by the use in baking of the same enzyme preparation comprising glucose oxidase, and at least 10 units of hemicellulase and/or at least 10 units of cellulase per kg of flour.

7.7 For the above given reasons, the subject-matter of the claims of the main request is novel. The assessment of novelty of the subject-matter of the claims of the auxiliary requests could thus be dispensed with.

8. Since the Opposition Division has not considered the question of inventive step the Board makes use of its discretionary power under Article 111(1) EPC to remit the case to the Opposition Division for further prosecution, on the basis of claims 1 to 11 submitted during oral proceedings as main request. The Board, however, remarks that there is an obvious error in claim 11 of the main request, which in its last line (see section VII above) has to read: "...least 10 units of cellulase." instead of "...least 10 units of hemicellulase."

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 further prosecution on the basis of claims 1 to 11 submitted during oral proceedings (main request).

The Registrar:

The Chairwoman:

U. Bultmann

U. Kinkeldey