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D E C I S I O N
of 4 March 2004

Case Number: T 0679/00 - 3.3.2

Application Number: 93909558.4

Publication Number: 0639054

IPC: A23J 1/20

Language of the proceedings: EN

Title of invention:

Method for obtaining high-quality protein products from whey

Patentee:

Tetra Laval Holdings & Finance SA

Opponent:

APV PASILAC A/S

Headword:

Method for obtaining protein whey/TETRA LAVAL HOLDINGS &
FINANCE SA

Relevant legal provisions:

EPC Art. 56

Keyword:

"Main, first and second request - inventive step - no: obvious
juxtaposition of two known process steps"

Decisions cited:

-

Catchword:

-



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Boards of Appeal

Chambres de recours

Case Number: T 0679/00 - 3.3.2

DECISION
of the Technical Board of Appeal 3.3.2
of 4 March 2004

Appellant:
(Opponent)

APV PASILAC A/S
2 Europaplads
DK-8100 Aarhus C (DK)

Representative:

Zeuthen-Aagaard, Henrik
Chas. Hude
33 H.C. Andersens Boulevard
DK-1553 Copenhagen V (DK)

Respondent:
(Proprietor of the patent)

Tetra Laval Holdings & Finance SA
Avenue Général-Guisan 70
P.O. Box 430
CH-1009 Pully (CH)

Representative:

Lerwill, John
A.A. Thornton & Co.
235 High Holborn
London, WC1V 7LE (GB)

Decision under appeal:

Interlocutory decision of the Opposition
Division of the European Patent Office posted
11 April 2000 concerning maintenance of
European patent No. 0639054 in amended form.

Composition of the Board:

Chairman: U. Oswald
Members: J. Riolo
J. H. P. Willems

Summary of Facts and Submissions

- I. European patent No. 0 639 054 based on application No. 93 909 558.4 was granted on the basis of 5 claims.

Independent claim 1 as granted read as follows:

"1. Method of obtaining high quality products from whey, characterized in that whey is subjected to a cross flow filtration in a microfilter, wherein supplied whey and retentate are brought to circulate in a circulation path on one side of the membrane area of the microfilter, and whey which has passed the membrane surface (permeate) is circulated in a second circulation path on the other side of the membrane area, the filtration being performed in such a way that the pressure drop over the whole membrane area is kept constant and the pressure drop over the membrane area is below 0.8×10^5 Pa (0.8 bar), and there is obtained a fractionation of milk serum protein with denatured milk serum protein and fat being retained in the retentate while undenatured milk serum protein passes the membrane and is present in the permeate, whereby after an end treatment of the permeate there is obtained a whey protein product rich in α -lactalbumin and β -lactoglobulin but with a low fat content."

- II. Notice of opposition was filed against the granted patent by the appellant (opponent).

The patent was opposed under Article 100(a) EPC for lack of novelty and lack of inventive step.

The following document was *inter alia* cited during the proceedings:

(1) Dairy Technology, April 1991, pages 5 to 7

III. The interlocutory decision of the Opposition Division established that the patent could be maintained in an amended form on the basis of the second auxiliary request as submitted during the oral proceedings.

The Opposition Division rejected the main request because it lacked novelty over the disclosure in document (1).

As to the first auxiliary request, the Opposition Division expressed the view that it contravened the requirements of Article 123(2) EPC.

Claim 1 of the second auxiliary request read:

"1. Method of obtaining high quality products from whey, characterized in that whey is **preconcentrated by ultrafiltration**, following which it is subjected to a cross flow filtration in a microfilter, wherein supplied whey and retentate are brought to circulate in a circulation path on one side of the membrane area of the microfilter, and whey which has passed the membrane surface (permeate) is circulated in a second circulation path on the other side of the membrane area, the filtration being performed in such a way that the pressure drop over the whole membrane area is kept constant and the pressure drop over the membrane area is below 0.8×10^5 Pa (0.8 bar), and there is obtained a fractionation of milk serum protein with denatured milk

serum protein and fat being retained in the retentate while undenatured milk serum protein passes the membrane and is present in the permeate, whereby after an end treatment of the permeate there is obtained a whey protein product rich in α -lactalbumin and β -lactoglobulin but with a low fat content." (Emphasis added.)

Concerning this request, no objections with respect to Article 123 EPC and novelty were raised by the opponent and the Opposition Division did not differ.

As regards inventive step, the Opposition Division was of the opinion that it was not obvious to combine the preconcentration step by ultrafiltration introduced in claim 1 of the second auxiliary request with the cross-flow microfiltration as disclosed in document (1) in order to achieve the desired specific fractionation of milk serum, i.e., on one side, a retentate with denatured milk serum protein, and on the other, a permeate containing undenatured milk serum protein.

IV. The appellant lodged an appeal against the said decision.

V. Oral proceedings were held before the Board on 4 March 2004.

During the oral proceedings, a set of claims was filed as auxiliary request 2 in addition to the set of claims of the first auxiliary request filed on 3 February 2004 with the respondent's letter of 2 February 2004.

Claim 1 of the first auxiliary request reads:

"1. Method of obtaining high quality products from whey, characterized in that whey is preconcentrated by ultrafiltration, following which it is subjected to a cross flow filtration in a microfilter, wherein supplied whey and retentate are brought to circulate in a circulation path on one side of the membrane area of the microfilter, and whey which has passed the membrane surface (permeate) is circulated in a second circulation path on the other side of the membrane area, the filtration being performed in such a way that the pressure drop over the whole membrane area is kept constant and the pressure drop over the membrane area is below 0.2×10^5 Pa (0.2 bar), and there is obtained a fractionation of milk serum protein with denatured milk serum protein and fat being retained in the retentate while undenatured milk serum protein passes the membrane and is present in the permeate, whereby after an end treatment of the permeate there is obtained a whey protein product rich in α -lactalbumin and β -lactoglobulin but with a low fat content." (Emphasis added.)

Claim 1 of the second auxiliary request reads:

"1. Method of obtaining high quality products from whey, characterized in that whey is preconcentrated by ultrafiltration, following which it is subjected to a cross flow filtration in a microfilter, wherein supplied whey and retentate are brought to circulate in a circulation path on one side of the membrane area of the microfilter, and whey which has passed the membrane surface (permeate) is circulated in a second

circulation path on the other side of the membrane area, the filtration being performed with a constant capacity and constant passage of protein by control of the transmembrane pressure and in such a way that the pressure drop over the whole membrane area is kept constant and the pressure drop over the membrane area is below 0.2×10^5 Pa (0.2 bar), and there is obtained a fractionation of milk serum protein with denatured milk serum protein and fat being retained in the retentate while undenatured milk serum protein passes the membrane and is present in the permeate, whereby after an end treatment of the permeate there is obtained a whey protein product rich in α -lactalbumin and β -lactoglobulin but with a low fat content." (Emphasis added.)

VI. The appellant contested the findings of the Opposition Division that the subject-matter of the patent in suit was inventive.

In its opinion, the mere addition of an ultrafiltration step to the process described in document (1) could not be regarded as an invention because ultrafiltration was per se a known method and because it merely led to a concentrated whey by water elimination in the claimed process which was the known purpose of this technique.

VII. The respondent (patentee) submitted that the conclusions of the Opposition Division with respect to inventive step were correct.

It argued that it was not obvious to add the ultrafiltration step to the process of document (1) because none of the prior art documents disclosed an

ultrafiltration step prior to the microfiltration of whey.

It moreover submitted that this step led to a sharper fractionation of the whey products.

VIII. The appellant requested that the decision under appeal be set aside and that European patent No. 0 639 054 be revoked.

The respondent requested that the appeal be dismissed or, alternatively, that the patent be maintained on the basis of the first auxiliary request filed on 3 February 2004 with a letter dated 2 February, or on the basis of the second auxiliary request filed during the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

The main request corresponds to the set of claims as maintained by the Opposition Division during the oral proceedings.

2.1 Articles 123 and 84 EPC

No objection under Articles 123 and 84 EPC was raised by the appellant before the Opposition Division and the Board sees no reason to differ.

As a matter of fact, the feature that the whey is pre-concentrated by ultrafiltration which was added to claim 1 as granted is disclosed on page 5, lines 3 and 4, of the application.

This was not contested by the appellant.

As regards the comment made by the appellant during the oral proceedings that there is no basis in the application for any particular effect or invention linked to the combination of an ultrafiltration step prior to the microfiltration of the whey, the Board notes that these considerations do not call into question the fact that the pre-concentration step by ultrafiltration prior to the microfiltration of the whey was indeed disclosed in the application as originally filed.

2.2 Inventive step

- 2.2.1 The contested patent relates to a process for obtaining high-quality protein products from whey by causing supplied whey together with retentate to circulate in a circulation path on one side of the membrane area of the microfilter, and whey which has passed the membrane surface (permeate) is brought to circulate in a second circulation path on the other side of the membrane area, the filtration being performed in such a way that the pressure drop over the whole membrane area is kept constant and the pressure drop over the membrane area is below 0.8×10^5 Pa (0.8 bar). (Page 2, line 3, lines 42 to 49.)

The Board agrees with the parties that document (1) can be regarded as the closest prior art.

Document (1) describes a specific cross flow filtration, i.e. a uniform transmembrane pressure microfiltration, for obtaining high quality protein products from whey by removal of fat. The transmembrane pressure in document (1) is uniform and it also has a very small pressure difference as shown in figure 2, from which a pressure drop over the membrane area of about 0.25 bar can be estimated. This step is followed by an ultrafiltration step. (See page 6, lines 4 to 5, 34 to 35 and 86 to 88).

Document (1) does not however disclose an ultrafiltration step prior to the microfiltration of the whey.

According to the respondent, a better fractionation of the whey product was achieved over document (1) by this ultrafiltration step prior to the microfiltration.

In order to demonstrate this effect, the respondent referred to an e-mail it received from the inventor stating that a sharper fractionation of the whey was achieved when an ultrafiltration step was performed prior to the microfiltration.

In that respect, the Board notes that the e-mail referred to by the respondent was not submitted during the procedure.

The Board also observes that the contested patent is silent about any particular effect linked to the use of an ultrafiltration step.

In fact, the complete passage dealing with ultrafiltration step reads:

"According to the method of the invention it is possible to achieve operation periods of at least 20 hours with a constant capacity and constant passage of proteins by controlling the transmembrane pressure, which is of advantage if the whey for example is pre-concentrated by ultrafiltration. The operation time for ultrafiltration is usually 20 hours."

From this disclosure, it is apparent that the pre-concentration by ultrafiltration is not a key feature as it is merely described as an optional feature.

Moreover, the advantage linked to this step can only be seen in that, as the microfiltration can be operated for as long as 20 hours before it is necessary to stop the process for cleaning the membrane, it is convenient to use ultrafiltration as means of pre-concentration because it has the same operation time, so that both operations can be stopped for cleaning both filters at the same time.

The Board also observes that the only example of the application as originally filed showing the fractioning of the whey according to the patent in suit does not refer to any pre-concentration step, and the claimed invention did not require such a step either.

Under these circumstances, in the absence of any further elements, the Board concludes that no particular effect can be taken into account as regard

the fractionation of whey products for the use of the preconcentration step by ultrafiltration prior to the microfiltration of the whey.

- 2.2.2 Accordingly, the problem to be solved by the subject-matter of claim 1 of the patent in suit as against document (1) can only be seen in the provision of an alternative process for obtaining high-quality protein products from whey.
- 2.2.3 This problem is solved by the process according to claim 1 of the contested patent by the use of a preconcentration step involving ultrafiltration prior to the microfiltration of the whey and, in the light of the description of the patent in suit, the Board is satisfied that it has been solved.
- 2.2.4 Thus, the question to be answered is whether the proposed solution, i.e. the use of a preconcentration step involving ultrafiltration prior to the microfiltration of the whey, would have been obvious to the skilled person faced with the problem defined above in the light of the prior art.

In that respect, document (1) also mentions an ultrafiltration step in the process for obtaining high-quality products from whey, which clearly shows that ultrafiltration is a well-known method in the art for eliminating water.

In its written submission and during the oral proceedings, the appellant and its expert submitted that, as the filters for microfiltration were much more expensive than the ones used for ultrafiltration, it

was obvious for cost considerations to reduce the volume to be microfiltered in order to increase the life time of the microfiltration membrane.

These considerations have not been contested by the respondent.

Accordingly, the Board is satisfied that the skilled person faced with the problem as defined above under 2.2.2 had at least one good reason to preconcentrate the whey prior to microfiltration.

As ultrafiltration is a known method to that end, the skilled person would end up with the subject-matter of the claimed process without inventive activity just by the juxtaposition of two known steps. In the absence of any particular effect, the ultrafiltration step appears indeed to be merely the result of an obvious choice within methods known in the prior art for reducing the volume to be filtrated.

As the respondent's argument that the ultrafiltration step leads to an improved fractionation of the whey products cannot be followed as discussed above (see 2.2.1) and since the mere fact that the combination of the two steps is not described in the prior art document is *per se* not enough to substantiate an inventive step, contrary the respondent's view, the Board can only conclude that the subject-matter of claim 1 does not involve an inventive step as required by Article 56 EPC.

Since claim 1 of the set of claims under consideration is not allowable, there is no need for the Board to consider the remaining claims.

3. *First and second auxiliary requests*

As no effect has been shown for the features introduced in the first and second auxiliary requests, respectively, and no further arguments have been submitted to substantiate an inventive step, the reasoning under 2.2, i.e. juxtaposition of known process steps, also holds good for these sets of claims.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:



A. Townend

The Chairman:



U. Oswald

