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**D E C I S I O N**  
**of 28 October 2005**

**Case Number:** T 0618/03 - 3.3.09

**Application Number:** 9306461.41

**Publication Number:** 0473270

**IPC:** A23J 3/08

**Language of the proceedings:** EN

**Title of invention:**

Method for preparing a transparent adjusted milk whey protein  
and an adjusted milk whey protein product

**Patentee:**

DAIICHI KASEI CO., LTD.

**Opponents:**

- 01: Snow Brand Milk Products Co., Ltd.  
02: Stichting Behartiging Octrooibelangen  
Coöperatieve Zuivelindustrie

**Headword:**

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**Relevant legal provisions:**

EPC Art. 56

**Keyword:**

"Inventive step (no) - Solution to the technical problem  
obvious"

**Decisions cited:**

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**Catchword:**

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Case Number: T 0618/03 - 3.3.09

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.09  
of 28 October 2005

**Appellant:** DAIICHI KASEI CO., LTD.  
(Proprietor of the patent) 7-1, Okanonishi-cho  
Kawate  
Yamashina-ku  
Kyoto (JP)

**Representative:** Wetke, Ellen  
Zacco Denmark A/S  
Hans Bekkevolds Allé 7  
DK-2900 Hellerup (DK)

**Respondent:** Snow Brand Milk Products Co., Ltd.  
(Opponent 01) 1-1 Naebocho 6-chome  
Higashi-ku  
Sapporo-shi  
Hokkaido (JP)

**Representative:** Boeters, Hans Dietrich  
Patentanwälte Boeters & Bauer  
Bereiteranger 15  
D-81541 München (DE)

(Opponent 02) Stichting Behartiging Octrooibelangen  
Coöperatieve Zuivelindustrie  
Parkweg 2  
NL-2585 JJ Den Haag (NL)

**Representative:** van Gennip, Johannes Simeon W.  
Vereenigde  
Postbus 87930  
NL-2508 DH Den Haag (NL)

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 3 April 2003  
revoking European patent No. 0473270 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** P. Kitzmantel  
**Members:** A.-T. Liu  
B. Günzel

## Summary of Facts and Submissions

- I. Two notices of opposition were lodged against European patent No. 0 473 270 which had been granted with two, independent claims. The oppositions were filed on the grounds of Article 100(a) and (b) EPC and supported *inter alia* by the following documents:
- D3: Journal of Food Processing and Preservation 2  
(1978) 111-121
- D4: GB-A-2 063 273.
- II. A first appeal was lodged by the patentee against a first decision of the opposition division, revoking the patent on the ground that the subject-matter of the independent Claim 2 as granted lacked novelty.
- III. During the written proceedings of this first appeal the appellant filed an Experimental Report dated April 12, 2001. At the oral proceedings on 22 May 2001, the appellant presented a new main request and a new auxiliary request. In the ensuing decision T 1206/97, the board of appeal concerned decided that the case be remitted to the first instance for further prosecution on the basis of the single claim of the main request.
- IV. At the subsequent oral proceedings before the opposition division on 19 March 2003, the patentee presented a new main request and four auxiliary requests. The main request was based on claims 1 and 2 as granted and the auxiliary request 4 corresponded to the main request underlying the decision T 1206/97.

V. By decision taken at the oral proceedings and issued on 3 April 2003, the opposition division revoked the patent. It held that, in view of the requirements of Rule 71a EPC, the patentee's main and auxiliary requests 1 to 3 were late filed and refused to admit them into the proceedings. The only remaining request, auxiliary request 4, was considered to contravene the requirements of Article 123(2) EPC.

VI. A notice of appeal by the patentee, lodged against this second decision of the opposition division, was received on 6 June 2003. With the Statement of the grounds of appeal received on 13 August 2003 the appellant submitted a main request and seven auxiliary requests. The main request and auxiliary requests 1, 3, 5 and 7 were subsequently withdrawn at the oral proceedings which took place on 28 October 2005. Hereinafter, the remaining auxiliary requests 2, 4 and 6 of 13 August 2003 will be referred to as the main request, the first and the second auxiliary requests, respectively.

VII. The single claim of the main request on file was the same as Claim 1 as granted, which read as follows:

"A method for preparing of a transparent milk whey protein product, characterised in that milk whey protein is purified, a solution containing said milk whey protein and at a pH of below 4 or above 6 and having a total salt content of not higher than 50 mM is heated to a temperature not lower than 55°C to obtain a transparent solution, at least one salt is added to said transparent solution, the pH of said solution is

adjusted again to below 4 or above 6 and said solution is heated."

VIII. The single claim of the first auxiliary request on file was worded as follows:

"A method for preparing of a transparent milk whey protein product, characterised in that milk whey protein is purified, a solution containing said milk whey protein and at a pH of below 4 or above 6 and having a total salt content of not higher than 50 mM is heated to a temperature not lower than 55°C to obtain a transparent solution, the pH of said solution is adjusted again to below 4 or above 6, and then a salt for flavouring is added to said transparent solution, and then the resulting solution is heated."

IX. The single claim of second auxiliary request on file read as follows:

"A method for preparing of a transparent milk whey protein product, characterised in that milk whey protein is purified, a solution containing said milk whey protein and at a pH of below 4 or above 6 and having a total salt content of not higher than 50 mM is heated to a temperature not lower than 55°C to obtain a transparent solution, sodium chloride is added to said transparent solution, the pH of said solution is adjusted again to below 4 or above 6 and said solution is heated."

X. The appellant's arguments were as follows:

- With respect to the closest prior art D4, the technical problem to be solved was the provision of a process for preparing a transparent whey product with a desired low amount of salt.
  
- The solution proposed by the patent in suit included the use of a whey protein solution having a total salt concentration of 50 mM or lower.
  
- The Experimental Report showed that the stipulated limit of salt content was essential for obtaining a transparent product. For these test series, the samples were not subjected to a pH adjustment prior to the second heating. Such an adjustment as defined in Claim 1 was only necessary if the pH value of the solution drifted outside the indicated limit.
  
- D3 and D4 were concerned with the rheological properties of the whey solutions. They did not address the problem of their transparency; nor did they suggest the stipulated limit of salt concentration.
  
- Furthermore, D4 did not suggest adding salt, NaCl inclusive, for flavoring. The Ca salt used in D4 was not a flavoring agent.
  
- In D3, NaCl was added for gel strength and not for the purpose of adding flavour.

XI. The respondent - opponent 02 essentially argued as follows:

- The technical problem to be solved with respect to D4 could not be based on the salt content, which was already disclosed therein.
- The test data in the Experimental Report showed that the limit of salt content of 50 mM was not relevant for obtaining a transparent product.
- Moreover, the influence of salt content on the transparency of the solution was known from both D4 and D3.
- D3 disclosed the addition of  $\text{CaCl}_2$  and NaCl to whey protein solutions. Furthermore, the addition of NaCl for flavouring was common in the art. It was therefore obvious to modify the process of D4 with the addition of NaCl instead of the Ca-salt.

XII. The respondent - opponent 01 did not make any submissions in writing and, although duly summoned, was not represented at the oral proceedings, as indicated in its letter dated 27 October 2005.

XIII. The appellant - patentee requested that the decision under appeal be set aside and the patent be maintained with Claim 1 of auxiliary request 2 filed on 13 August 2003 (main request). As first auxiliary request, the appellant requested that the patent be maintained with Claim 1 of auxiliary request 4 filed on 13 August 2003. As second auxiliary request, the appellant requested

that the patent be maintained with Claim 1 of auxiliary request 6 filed on 13 August 2003.

The respondent - opponent 02 requested that the appeal be dismissed.

## **Reasons for the Decision**

### *Main request*

1. For the purpose of further discussion, the board accepts that Claim 1, which corresponds to Claim 1 as granted, as well as the subject-matter covered thereby, satisfies the requirements of Articles 54, 83, and 123(2) EPC. This finding also applies to Claim 1 of each of the first and second auxiliary requests. The reasons for these findings, however, need not be given here since these requests are refused on the ground of lack of inventive step, as set out hereinafter.

### 2. *Inventive step*

2.1 Claim 1 is directed to a method for preparing a transparent milk whey protein product which essentially stipulates that (see point VI above):

(i) milk whey protein is purified,

(ii) the solution containing purified milk whey protein at a pH of below 4 or above 6 and having a total salt content of not higher than 50 mM is heated to yield a transparent solution,

(iii) a salt is added to the transparent solution and the pH of the solution adjusted again to below 4 or above 6, and

(iv) the resulting solution heated.

2.2 D4, by common agreement the piece of prior art closest to the subject-matter of Claim 1, is directed to a method of preparing soluble denatured whey protein compositions for incorporation in foodstuffs (abstract). According to D4, the protein compositions are obtained by heating a whey solution at a pH-value of 7.5 and at 85°C, adding a multivalent cation, for instance Ca, to the solution (solution A) and renewed heating (page 2, lines 13 to 19 and Table A).

2.3 The appellant submitted that the technical problem to be solved with respect to D4 was the provision of a method for preparing a stable whey protein solution with a desired low content of salt and with transparent or translucent appearance. However, as correctly pointed out by the respondent, D4 already discloses the addition of Ca salt (see point 2.2 above). Therefore, in the board's judgment, the technical problem existing with respect to D4, resides only in the provision of a method for preparing a whey protein solution with transparent or translucent appearance.

2.4 The board accepts, in favour of the appellant, that to the skilled reader the wording of Claim 1, feature (iii), (see point 2.1 above) is to be construed in the sense that the pH re-adjustment of the solution after the first heating is not obligatory if the pH is still, at that stage, within the required ranges. Accordingly,

the corresponding stipulation is interpreted by the board as a requirement that the pH value of the solution be verified after the first heating and re-adjusted prior to the second heating, if necessary. In view of this construction, the subject-matter of Claim 1 is only distinguished from D4 in that the solution of milk whey protein to be heated (for the first time) has a total salt content of not higher than 50 mM.

- 2.5 It is common ground that the technical problem of preparing a whey protein solution with transparent or translucent appearance is solved by the method according to Claim 1.
- 2.6 The board, however, holds that the proposed solution to the technical problem, essentially characterised by the use of purified milk whey protein with a total salt content of not higher than 50 mM, does not involve an inventive step, for the reasons which follow.
- 2.6.1 The appellant has made reference to the Experimental Report, submitted during the first appeal proceedings, as proof of the significance of the salt content as regards transparency (see point III above). According to this document, 50 mM NaCl were added to solutions of whey protein isolate (hereinafter WPI) and the resulting samples FP-2 and FP-21 heated at a pH-value of 7 and at 80°C for one hour. These solutions were transparent after heating, in contrast to the solution FC-11, obtained by addition of 75 mM NaCl to the same WPI, which changed to white gel by heating (see page 3, Table 2 and item "1-4 Results").

As pointed out by the respondent and not refuted by the appellant, however, due to the salt content of about 6 mM of the starting material WPI (see page 2, Table 1), the solutions FP-2 and FP-21 after addition of NaCl in fact have a total salt concentration higher than 50 mM, ie about 56 mM. Thus, it follows from the Experimental Report that, for solving the present technical problem, it is not absolutely necessary to respect the upper limit of 50 mM of salt content stipulated in Claim 1, since transparent milk whey products can also be obtained with solutions having a total salt content exceeding this limit.

2.6.2 The light transmission properties of solutions containing desalted cheese whey and cheese whey which has not been desalted are, on the other hand, investigated in D4, Example IV. After heating at a pH-value of 7.5 at 85°C for 10 minutes, the light transmission of the sample made with desalted cheese whey is determined to be 79,5%, as compared to 46.2% for the non-desalted sample (page 4, lines 9 to 19 and Table D). Thus, not only does D4 teach the step of desalting the whey protein prior to heating, it also shows that the desalting improves the light transmission significantly.

The effect of salt content on the light transmission of the heated solution found in D4 is confirmed by D3, which is directed to the effect of dialysis on heat induced gelation of whey protein concentrates (WPC). In this prior art document, it is expressly reported that "gels from D-WPC (i.e. dialysed whey protein concentrates, remark added by the board) were also more translucent in visual appearance indicating less light

scattering than observed in the more opaque gels from ND-WPC" (i.e. non-dialysed whey protein concentrates, remark added by the board), see D3, abstract and page 115, last paragraph.

Thus, contrary to the appellant's submissions, both D3 and D4 address the question of transparency of the whey protein solutions. The skilled person, faced with the problem of preparing a translucent or transparent milk protein product, knows from D4 as well as D3 that the solution to this problem lies in the use of a whey solution with reduced salt content. With this knowledge in mind, it is only a matter of routine experimentation for him to adjust the salt content of the whey protein solution in respect of the degree of translucency or transparency of the product he desires to obtain.

- 2.6.3 In summary, the board finds that the limit of total salt content of not higher than 50 mM is not critical for solving the present technical problem. But, even if the board, in favour of the appellant, considered this limit to be essential for solving the technical problem, it concludes that both D3 and D4 give the skilled person an incentive to reduce the salt content of the whey solution with a view to obtaining a translucent or transparent product. As a consequence, the method according to Claim 1 lacks an inventive step in respect of the teaching according to D4, or in respect of the teaching according to D4 combined with that of D3. The present main request is therefore refused under Article 56 EPC.

*First and second Auxiliary requests*

3. Claim 1 of the first auxiliary request differs from Claim 1 of the main request essentially in that it qualifies the salt to be added to the transparent solution as being a "salt for flavoring" (see Claim 1, point VII above). Claim 1 of the second request essentially differs from Claim 1 of the main request in that it defines the salt to be "sodium chloride" (see Claim 1, point VIII above).

The board observes that the description contains the general statement that "the solution to be heated in the invention may contain a salt for flavoring", without giving any definition of the expression "salt for flavoring" (see published patent application, page 3 line 29). On the other hand, the only salt used in all the specific examples is NaCl (see patent application, Example 16 onwards). The board therefore holds that the meaning of the feature "salt for flavouring" is in fact restricted to NaCl and that, in consequence, the scope of the subject-matter of Claim 1 of the first auxiliary request is in substance not different from that of Claim 1 of the second auxiliary request. The criteria concerning the appreciation of the issue of obviousness are therefore the same for both auxiliary requests.

4. *Inventive step*

- 4.1 As already indicated above, D4 already discloses the addition of Ca to the whey protein solution before renewed heating (see point 2.2).

As is clear from the description of the patent in suit, milk whey protein products mainly find their applications in the preparation of foodstuffs (page 2, lines 7 to 10). This is also recognised in D3, which expressly states in its Introduction that "Excellent nutritional values and unique functional properties have resulted in considerable interest in the recovery and utilization of cheese whey proteins in food systems" (page 112). Since the effect of the addition of  $\text{CaCl}_2$  and  $\text{NaCl}$  on gelation is investigated in length in the context of D3, these salts are clearly common additives in these fields of application (see "Abstract", "Introduction", page 112 and "Effect of Salt Addition on Gelation", page 117, last paragraph to page 119, last paragraph and "Summary and Conclusions", page 120). In view of this teaching, it is a mere matter of choice, not requiring inventive activity, for the skilled person to replace the Ca salt in the process of D4 with  $\text{NaCl}$ .

- 4.2 The appellant's argument that neither D3 nor D4 suggests adding a salt for flavouring is not relevant since, as indicated above, the only flavoring salt in the sense of the patent in suit is  $\text{NaCl}$  (point 3).
- 4.3 The appellant has not submitted, and the board does not see any reason for presuming, that the distinguishing feature based on the addition of  $\text{NaCl}$  (as flavoring salt) instead of  $\text{CaCl}_2$ , is significant in combination with the limit of salt content. Since the incorporation of each of these distinguishing features into the subject-matter of Claim 1 is obvious in view of D4 in combination with D3, the same finding applies to their aggregation in the claimed subject-matter (see also

point 2.6.3 above). As a consequence, the first and second auxiliary requests are also refused on the ground that Claim 1 of each of these requests does not meet the requirements of Article 56 EPC.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Röhn

P. Kitzmantel