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Datasheet for the decision of 20 October 2015

Case Number: T 0314/12 - 3.3.08

Application Number: 99960953.0

Publication Number: 1141233

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Language of the proceedings: EN

Title of invention:
LIQUID STARTER CULTURES HAVING IMPROVED STORAGE STABILITY AND USE THEREOF

Patent Proprietor:
Chr. Hansen A/S

Opponent:
DuPont Nutrition Biosciences ApS

Headword:
Liquid starter cultures/CHR. HANSEN

Relevant legal provisions:
EPC Art. 123(2), 123(3), 84, 83, 54, 56, 111(1)

Keyword:
Main request - requirements of the EPC met (yes)

Decisions cited:
G 0003/14, T 0464/94

Catchword:

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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 0314/12 - 3.3.08

D E C I S I O N
of Technical Board of Appeal 3.3.08
of 20 October 2015

Appellant: (Patent Proprietor)	Chr. Hansen A/S Bøge Allé 10-12 2970 Hørsholm (DK)
Representative:	Renken, Joachim Hoffmann Eitle Patent- und Rechtsanwälte PartmbB Arabellastraße 30 81925 München (DE)
Respondent: (Opponent)	DuPont Nutrition Biosciences ApS Langebrogade 1 P.O. Box 17 1001 Copenhagen K (DK)
Representative:	Williams, Aylsa D Young & Co LLP Briton House Briton Street Southampton SO14 3EB (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 23 December 2011 revoking European patent No. 1141233 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman	M. Wieser
Members:	B. Stolz
	J. Geschwind

Summary of Facts and Submissions

I. The appeal lies against the decision of the opposition division whereby European patent No. 1141233 was revoked. At oral proceedings, the opposition division decided that the main request before it did not meet the requirements of Article 123(2) EPC, that auxiliary requests 1, 5 and 6 were not admitted, that auxiliary request 2 did not meet the requirements of Article 83 EPC, and that auxiliary requests 3 and 4 lacked novelty (Article 54 EPC). All auxiliary requests were filed at the oral proceedings.

II. With its grounds of appeal, the patent proprietor (appellant) submitted a main request, auxiliary requests 1 to 17, and documents D13 to D17.

III. With its response to the grounds of appeal, the opponent (respondent) submitted a new English translation of document D2, documents D18a and D18b, and document D19.

IV. In further submissions, the appellant filed corrected versions of auxiliary requests 3, 4, 5, 12, 13 and 14 and replaced auxiliary requests 9, 10 and 11 by new requests.

V. In a further submission, the respondent filed document D20.

VI. The parties were summoned to oral proceedings. A communication pursuant to Article 15(1) of the Rules of Procedure of the Boards of Appeal (RPBA) annexed to the summons, informed them of the preliminary non-binding opinion of the board on some of the issues of the appeal proceedings.

VII. In further submissions, the appellant filed new auxiliary requests 18 to 26 and new documents D21 to D25, the respondent filed new documents D26 to D28.

VIII. At the oral proceedings the appellant made auxiliary request 18 its new main request and withdrew all other requests.

IX. Independent claims 1, 7 and 12 of the main request read as follows:

"1. A liquid starter culture contained in a container suitable for distributing the starter culture to a site of use, the starter culture comprising at least one compound that has a stabilising effect on the metabolic activity selected from the group consisting of oxygen removal activity, acid producing activity and metabolite producing activity, of the starter culture in an amount permitting that, during storage of the starter culture in liquid state at a temperature of -20°C to 0°C for 1 week or more, said starter culture retains at least 50% of its initial metabolic activity where the compound that has a metabolic activity stabilising effect is selected from the group consisting of formic acid, a formate, IMP and a compound involved in the biosynthesis of nucleic acids.

7. A method for providing a stabilised commercial liquid starter culture, the method comprising adding to a starter culture concentrate at least one compound that has a stabilising effect on the metabolic activity selected from the group consisting of oxygen removal activity, acid producing activity and metabolite producing activity, of the starter culture in an amount permitting that during storage of the culture in liquid

state at a temperature of -20°C to 0°C for one week or longer, at least 50% of the initial metabolic activity of the culture concentrate is retained, and packaging the thus obtained stabilised starter culture in a commercial container for distributing the culture to a site of use wherein the stabilising compound is selected from the group consisting of formic acid, a formate, IMP and a compound involved in the biosynthesis of nucleic acid.

12. A method of preparing a food or a feed product, said method comprising inoculating a food or feed material with a stabilised culture according to any of claims 1-6 and incubating the inoculated material under conditions permitting the starter culture to become metabolically active."

Dependent claims 2 to 6 and 8 to 11 define specific embodiments of the liquid starter culture according to claim 1 and the method for providing said starter culture according to claim 7, respectively. Dependent claim 13 defines a specific embodiment of the method according to claim 12.

X. The following documents are referred to in this decision:

D1: Dahiya R.S. and Speck M.L., J. Dairy Sci. (1964) 47(4) pp. 374-377;

D2a: French language version of an extract from RIA n 467 from 23 September to 6 October 1991;

D3: Kaneko, T. el al, J. Dairy Sci., (1987) 70, pp. 1128-1133;

D4: Kirk, R. and Othmer, D., Encyclopedia of Chemical Technology, (1951) pp. 875-876;

D7: Declaration by Mikael Pianfetti and Jean-Philippe Obert;

D9: Declaration by Mikael Pianfetti;

D11: Ernest W. Flick, Industrial Solvents Handbook, Noyes Data Corp., (1991) p. 486;

D12: Declaration by Mikael Pianfetti, Repeat of experiments disclosed in D3;

D15: Di Marzio L. et al., J. Investigative Dermatology, (1999), 113, pp. 98-106;

D16: WO 99/62348 (1999).

XI. The arguments of the appellant, as far as relevant for the board's decision, are summarized as follows:

Admissibility of the main request

Added matter in respect of claims 1 and 7 and the use of the term "packaging" were issues which the opposition division had decided in favour of the appellant. With the summons to attend oral proceedings the board of appeal expressed its doubts as to the basis for these amendments. In reaction to this communication and one month before the oral proceedings, the appellant submitted the main request which raised no new issues and did not affect procedural economy.

Article 123(2) EPC

The patent disclosed a commercial liquid starter culture, which, in contrast to a bulk starter culture produced in-house, could be distributed to the site of food or feed manufacturing such as a dairy plant. The liquid starter culture was not only supplied to the site of food or feed manufacturing, but also stored there for extended periods of time prior to use. Therefore, the term *"commercial"* implicitly disclosed that the liquid starter culture according to claims 1 and 7 had to be provided in a container suitable for distribution.

Article 123(3) EPC

The terms *"contained in a packaging suitable for distribution"* and *"contained in a container suitable for distribution"* were synonymous. There was, therefore, neither a shift nor an extension of the scope of protection.

Article 84 EPC

The meaning of the term container was clear. The starter culture had to be contained in a container. Claims 1 and 7 comprised all the necessary elements for defining the invention.

Article 83 EPC

The liquid state of the starter culture was an essential technical feature. How to keep starter cultures liquid at temperatures below $0^{o}C$ belonged to the general technical knowledge. Examples of suitable concentrations of glycerol were given in paragraph

[0034] and examples of further combinations of suitable substances were disclosed in Example 4 of the patent.

Article 54 EPC

Document D2 disclosed a culture of lactic acid bacteria but neither a liquid starter culture, nor a movable container, nor the metabolic activities of the cultures when stored under the conditions of the claims. It was not disclosed whether the culture should be used as a starter culture or a non-starter culture as disclosed in documents D15 and D16. Document D9 could not serve as proof for the metabolic properties of the culture disclosed in document D2. These activities were strain specific.

D1 taught that purine and pyrimidine bases were added to a culture composition already containing milk and a lactic acid bacteria starting material. However, the addition of the bases to the lactic acid bacteria starting material, rather than to the culture composition, was not disclosed in document Dl. The bacteria mentioned in document D1 were not publicly available, and the document made no mention of a packaging or of the storage stability of the culture.

Article 56 EPC

Starting from document D3, disclosing a liquid starter culture comprising ascorbate as a stabilizing agent, the problem to be solved was the provision of an alternative stabilized liquid starter culture and a method for producing it. Document D3 suggested that the stabilizing effect of sodium ascorbate was due to a decrease of the redox potential of the liquid starter culture. The document explained that H_2O_2 produced by

bacteria in a starter culture was inhibitory and reducing the stability of the starter culture, and that sodium ascorbate reacted with H_2O_2 thereby removing the inhibitory substance. The use of sodium formate as an alternative stabilizer was, however, not obvious. Document D4, an Encyclopedia, merely disclosed some properties of sodium formate. It was known that sodium perfomate, produced by the reaction of H_2O_2 with sodium formate, was toxic to cells. Document D2, disclosing the addition of up to 5% of sodium formate to cultures of lactic acid bacteria, gave no reason why the compound was added to a culture of lactic acid bacteria.

XII. The arguments of the respondent, as far as relevant for the board's decision, are summarized as follows:

Admissibility of the main request

The subject matter of the main request had never before been the subject of the proceedings. The objection against claims 1 and 7 under Article 123(2) EPC leading to the amendment had been on the table from the beginning of the opposition procedure. Yet, the appellant did not consider it necessary to file requests which could be used as a fall-back position. At the oral proceedings in opposition procedures, the 9 auxiliary requests then on file had been replaced by 6 new auxiliary requests. With the grounds of appeal 17 new auxiliary requests have been filed. The new main request was filed as auxiliary request 18 only one month before the oral proceedings.

The appellant was under an obligation to conduct the proceedings with due care. In order to render the procedure transparent, fair, and effective and in order

to achieve legal certainty, all parties had to complete their relevant submissions during opposition proceedings. The Appellant did not present any good reason why he did not do so. In addition, admission of the main request would compel the board to remit the case or would disadvantage the opponent who could have reasonably expected that the requests considered by the opposition division would form the substantial basis for appeal proceedings. The opponent was now forced to either accept remittal and prolongation of the proceedings or, in the alternative, to abandon the option of having the case considered by the opposition division.

Finally, the amendments did not overcome the objections raised against the previous requests, and the replacement of the term "*packaging*" by the term *"container"* raised a new issue because it extended the scope of protection contrary to the requirements of Article 123(3) EPC.

Article 123(2) EPC

The subject matter of claims 1 and 7 had no basis in the application as filed. The patent did not provide a definition of the term *"container".* The only paragraph disclosing a container suitable for distribution of the starter culture to a site of use contained additional limitations, i.e. the container had to be suitable for connecting it directly to a process line. The first paragraph on page 5 of the published international patent application made no mention of a container. Said paragraph merely stated that the culture could be supplied to the site of use and stored for extended periods of time.

Article 123(3) EPC

The scope of the term *"packaging"* was not identical to the scope of the term *"container",* but was only partly overlapping. A packaging was more than a mere container and comprised also wrappings and the like. Replacing the term *"packaging"* by the term *"container"* led therefore to an extension of the scope of protection provided by claim 1.

Article 84 EPC

Essential features defining how the culture was kept in liquid state at temperatures between 0 and -20°C were missing in the claims.

The general term *"container"* was also not supported by the description. The only definition of a container on page 3 included further features relating to the use of the container in a process line.

Article 83 EPC

The patent did not sufficiently disclose how to keep a starter culture in a liquid state at temperatures between 0°C and -20°C.
Experiment C of document D7 showed the state of various starter cultures of L. lactis R-604 and S. thermophilus ST0394, containing 3% IMP or sodium formate, when stored under different temperature conditions. Yet, the teaching of the patent was not sufficient to practise the present invention because both strains in document D7 were frozen (i.e. not liquid) at -18°C. In addition it could also be seen that the culture of ST0394 containing 3% IMP, 3% sodium formate and 3% glycerol was frozen at -13°C and -10°C. Document D9 showed that

even cultures containing 40% IMP or Na-formate were all solid at -20°C. The claims covered thus a significant number of non-working embodiments and the patent placed an undue burden on the skilled person to find alternative additives necessary to maintain the starter culture in a liquid state in the claimed temperature ranges. If, as stated by the appellant, retaining 50% of metabolic activity after storage at the indicated temperatures depended on the use of a specific strain of lactic acid bacteria, the uncertainty about the selection of appropriate strains increased the burden on the skilled person even more.

Paragraph [0034] of the patent stated that sugar alcohols such as glycerol in the range of 5 to 40% can be added. The same paragraph offered alternatives such as disaccharides, including sucrose in an amount between 1% and 20% by weight, or carbohydrates, vitamins and/or antioxidants in ranges of 0.01 % to 1%, or Tween compounds (e.g. such as Tween 20, 60 and 80) in an amount of 0.1 to 2% by weight.

Example 4 of the patent (which is the only example of storage at temperatures below 0°C) comprised 35% glycerol and 0.8% Tween 80 (as well as 2% sodium formate)).

Many of the compounds and ranges taught in paragraph [0034] of the patent were, however, insufficient to maintain the starter culture in a liquid state at the indicated temperatures. For instance, glycerol at 5% did not maintain the starter culture in a liquid state at -20°C (as shown in document D9). 3% glycerol, 3% IMP and 3% Na-Formate did not maintain the starter culture in a liquid state even at -10°C (see D7 Experiment C). Likewise 1% sucrose would not maintain the starter

culture in a liquid state at -20°C. Therefore, the patent was simply an invitation to perform a research program in order to achieve the desired result.

Article 54 EPC

Document D2 disclosed the use of up to 5% sodium formate in *"bacterial culture concentrates"* that were used to inoculate milk. A "*bacterial culture concentrate*" clearly referred to a starter culture and 5% of sodium formate constituted an amount permitting the starter culture to retain at least 50% of its metabolic activity after storage in liquid state at a temperature of -20°C to 0°C for 1 week or more. The level of sodium formate disclosed in the examples of the patent was 3% and a preferred range encompassed from 0.015%-9% [0032]. 5% was in the middle of this preferred range.

Claim 1 did not actually require the starter culture to be stored. The claim merely required that if it were stored in a liquid state it would have the claimed stability. In other words this was simply a functional definition of the amount of stabilising compound, which had to be regarded as an unusual parameter introduced to disguise a lack of novelty.

Moreover, the term starter culture was not limited to starter cultures for the production of lactic acid. The purpose of use of the culture disclosed in document D2 didn't therefore matter.

The Appellant had argued that D2 did not disclose a bacterial culture concentrate in liquid form. However, the physical state could not help in delimiting the claimed subject matter from the prior art. Once a

material was known it was known in all physical states. The compound (or composition) itself had to be novel.

Document Dl disclosed a liquid starter culture comprising inosine or adenosine, both involved in the biosynthesis of nucleic acids, at a concentration corresponding to 0.0025% to 0.01%. The claims were not limited to any specific concentration.
Moreover,according to paragraph [0032] of the patent, a preferred range for the stabilising agent was 0.015% to 9%. Document D1 therefore disclosed a starter culture according to claim 1.

Article 56 EPC

Document D3, representing the closest state of the art, related to liquid concentrated starter cultures and the preservation of their metabolic activity by sodium ascorbate. The only difference between this disclosure and the subject-matter of the claims was that the specific compounds, recited in claim 1 or claim 7 were not disclosed.
According to document D3, the increased stability was achieved by storing the liquid concentrated starter culture in the presence of sodium ascorbate, thereby reducing the redox potential (Eh) of the solution. The technical problem was therefore the provision of an alternative reducing agent to maintain the metabolic activity of liquid starter cultures. The claimed solution, the use of a compound selected from the group consisting of formic acid, a formate, IMP and a compound involved in the biosynthesis of nucleic acids was not inventive in view of D3 in combination with general knowledge, as demonstrated by document D4, about the reducing properties of sodium formate.

Moreover, as shown by document D9, it was necessary to add 40% glycerol, in order to produce cultures which remained liquid at -20°C, and the addition of 40% glycerol alone resulted in retention of 50% of the metabolic activity, just as, according to the patent, the addition of formic acid, a formate, IMP or a compound involved in the biosynthesis of nucleic acids.

XIII. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request filed at the oral proceedings.

XIV. The respondent requested that the appeal be dismissed.

Reasons for the Decision

Admissibility of the main request

1. The main request differs from the main request filed with the grounds of appeal by the substitution of the term *"packaging"* by the term *"container"*. The opponent had objected to the use of the now substituted term under Article 123(2) EPC since the onset of the opposition proceedings. The opposition division, however, decided that the insertion, by amendment, of the term *"packaging"* into claims 1 and 7 met the requirements of Article 123(2) EPC (see point 1.2 of the decision). In the communication annexed to the summons to oral proceedings, the board expressed its preliminary opinion that it did not share the opinion of the opposition division on this point. In response thereto, the appellant submitted the present main request, which does not raise additional issues and does not delay the procedure. The board therefore decides to admit the main request into the procedure.

Admissibility of late filed documents

2. Neither of the parties objected to the introduction of documents D13, D16, D21, D22, D26, D27 and D28 into the appeal proceedings and the board decides to admit them.

Article 123(2) EPC

3. Claim 1 of the main request differs from claim 1 as granted only in that the feature *"contained in a packaging suitable for distributing the starter culture to a site of use"* has been amended to read *"contained in a container suitable for distributing the starter culture to a site of use"*. Likewise, claim 7 of the main request has been amended to include the step of "*packaging the thus obtained stabilised starter culture in a commercial container for distributing the culture to a site of use*".

4. It is common ground that a liquid starter culture as a result of its physical state has to be contained in some kind of receptacle or container.

5. The respondent, however, objected that there was no disclosure in the application as filed of containers suitable for distributing the culture to a site of use. The only reference to containers on page 3 of the description was to containers that could be directly connected to a process line. Apart from this reference, the description only stated that the liquid culture could be supplied and stored at the site of use.

6. According to the "*Summary of the invention*", the primary objective of the invention was to provide commercial liquid microbial starter cultures for the

manufacturing of food and feed products. It is a matter of course that a commercial product, like a commercial starter culture, is produced for sale and therefore, as it is in liquid state, it is implicit that it has to be contained in a container suitable for distributing it to a site of use.

7. The amended claims 1 and 7 do not therefore contain subject-matter extending beyond the content of the application as originally filed.

8. Claim 12 defines a method of preparing a food or feed product comprising inoculation of a food or feed material with a stabilized starter culture and incubation of the inoculated material under conditions permitting the metabolic activation of the starter culture.

9. The respondent argued that there was no direct and unambiguous disclosure of a method of preparing a food or feed product which comprised both, a step of inoculation and a step of metabolic activation of the starter culture.

10. The application as filed discloses that "*the invention pertains to a method of preparing a food or a feed product said method comprising using the stabilised starter culture according to the invention*" (page 13, lines 13 to 15).

11. The term *"starter culture"* indicates that the claimed cultures are suitable to start a process, either a fermentation process or simply the process of proliferation, which, in both cases requires that the cells become metabolically active.

12. It is furthermore stated that the food product is a milk-based product, a meat product, a vegetable product a beverage such as wine or beer (page 13, lines 17 to 20), or an animal feed (page 13, lines 30 to 34). In all these cases, the envisaged use includes metabolic activation of the starter culture upon inoculation.

13. On the other hand the application also discloses the use of the starter cultures as probiotics (cf. page 13, lines 22 to 28) and in this case metabolic activation may not be required.

14. Thus, the patent application directly and unambiguously discloses methods of preparing a food or feed product which do or don't (probiotics) require conditions permitting the metabolic activation of starter cultures.

The subject matter of claim 12, limited to one of the two possible ways of preparing a food or feed product, does therefore not extend beyond the content of the application as filed.

Article 123(3) EPC

15. The respondent argued that the scope of the term *"packaging"* was only partly overlapping with the scope of the term *"container"*, by which it was replaced, which led to an extension of the scope of protection provided by claim 1.

16. As mentioned above, it is common ground that a commercial liquid starter culture has to be placed in some kind of container. In the context of claim 1 as granted, the term "*contained in a packaging suitable for distributing the starter culture to a site of use*"

comprised on the one hand containers which by themselves, without further arrangements like wrappings etc., were suitable for distribution and on the other hand containers, which were not and which, therefore, required such extra wrappings etc. Restricting the claim to one of the two possibilities, i.e. to containers which are themselves suitable for distribution, reduces the scope of protection but does not lead to a violation of the requirements of Article 123(3) EPC. The same applies to claim 7.

Article 84 EPC

17. The respondent argued that the claims missed essential technical features defining how the culture was kept in liquid state at temperatures between 0 and -20°C. The paragraph bridging pages 11 and 12 of the application as filed described additional compounds as having a stabilising effect and it was stated that they are useful for carrying out the invention.

18. Respondent's objection concerns the definition of the claimed subject matter by an, in its view, insufficient number of features or properties which however have not been altered by the amendment. The objection in this respect is therefore not admissible (cf. Catchword of decision G 3/14: "*In considering whether, for the purposes of Article 101(3) EPC, a patent as amended meets the requirements of the EPC, the claims of the patent may be examined for compliance with the requirements of Article 84 EPC only when, and then only to the extent that the amendment introduces non-compliance with Article 84 EPC.*").

19. The respondent also argued that the term *"container"*, introduced by amendment, had no precise technical

meaning. The only container disclosed in the patent was a container suitable for direct use in a process line. Thus, a skilled person could not unambiguously determine the scope of protection provided by the claim.

20. As stated above, a commercial liquid starter culture is destined for distribution to a site of use. The culture has to be shipped in a container suitable for this purpose.

Apart from the functional limitation that the container has to be suitable for shipping, the meaning of the term container within the context of the claims is not limited in any way, for instance to particular kinds of containers. The term is clear within the meaning of Article 84 EPC and, as stated above (cf. points 5 to 7), implicitly but directly and unambiguously disclosed in the application as filed. Claims 1 and 7 are therefore also supported by the disclosure in the description.

21. The main request meets the requirements of Article 84 EPC.

Article 83 EPC

22. The subject matter of claim 1 is a liquid starter culture comprising a compound selected from formic acid, a formate, IMP and a compound involved in the biosynthesis of the nucleic acids which has a stabilising effect on the culture's metabolic activity when stored in liquid form for one week or more at a temperature of -20°C to 0°C. The compounds have to be present in a amount sufficient for obtaining this effect.

23. Due to this functional limitation, the claim does not encompass non-working embodiments.

24. The respondent argued that the skilled person, based on the information provided by the patent, was not in a position to readily perform the required functional tests because it had to assay wide concentration ranges of the listed compounds. The respondent submitted documents D7 and D9 in support of this argument.

25. The fact that the claim does not specify suitable concentration ranges of the stabilizing compounds and that the description itself mentions wide concentration ranges is not sufficient to conclude that the establishment of useful concentrations requires an undue amount of work. A patent application or a patent may only be objected to for lack of sufficient disclosure if there are serious doubts, substantiated by verifiable facts. The mere fact that a claim is broad is not in itself a ground for considering that the application does not comply with the requirement that it be sufficiently disclosed under Article 83 EPC (cf. Case law of the board's of appeal, 7th edition, C.II.6.1.4).

26. Example 4 of the patent discloses storage solutions suitable for achieving the desired effect.

27. Document D7 discloses experiments performed with the same bacterial strain, L. lactis R-604, as described in the patent and with S. thermophilus strain ST0394. Three experiments were performed. In experiment A, strain R-604 was stored at +20^{o}C for 1 week, i.e. at a temperature which lies outside the range mentioned in the claim. The conclusions form this experiment can

therefore not support respondent's argument. In experiment B, strain ST0394 was stored at temperatures ranging from 0°C to +20°C. No experimental data are shown. It is merely stated that the strain does not retain at least 50% of its initial activity in the presence of IMP and/or sodium-formate when stored for one week. In the absence of more specific information, it is not possible to conclude whether a culture stored at 0°C passed the test or not. Experiment C demonstrates that both strains were frozen when stored at -18°C in the presence of 3% IMP and/or sodium-formate but remained liquid when stored at higher temperatures. Yet, no results of tests measuring acid producing activities at these higher temperatures are reported.

28. Document D9 discloses experiments with the same two strains to determine the amount of glycerol needed to prevent the cultures from freezing at -20°C. It was determined that 40% Glycerol was needed to keep the cultures in liquid state at this temperature.

29. The board concludes that the facts and evidence provided in documents D7 and D9 are insufficient to support respondent's objection.

30. Following a second line of arguments, the respondent argued that the teaching how to keep cultures in liquid state at the indicated temperatures was insufficient.

31. In this respect, the patent mentions a number of useful compounds to be added to a starter culture (cf. paragraph [0034]), among them glycerol. Table 4.1. of the patent, and Example 4 disclose various combinations of useful additives and their effect on the stability of the starter cultures when stored at -20°C. According to Example 4, all combinations tested remained liquid

("*the storage solutions were kept at -20°C*" (page 13, line 54)) and provided the required effect. Thus, the patent itself provides suitable examples.

Moreover, it belongs to the common general knowledge of a skilled person that glycerol decreases the freezingpoint when added to aqueous solutions (cf. e.g. document D11). Likewise its use for the maintenance of bacterial cultures in liquid state at temperatures significantly below 0°C was generally known.

Respondent's argument that the skilled person was not in a position to readily maintain the starter cultures in liquid state at -20°C therefore fails.

32. In addition and based on Experiment 2 of document D9, the respondent argued that cultures stored at -20°C in the presence of 40% glycerol retained at least 50% acid producing activity even in the absence of any of the compounds listed in the claim. This made it impossible to readily determine the necessary amount of any of these compounds.

33. Claim 1 requires that the starter culture comprise one of the specific compounds listed and retain at least 50% of its metabolic activity when stored at any temperature between -20°C and 0°C for one week. As shown in point 31, above, the patent discloses several examples falling within the scope of the claim and achieving the desired result. An argument under Article 83 EPC, that the same effect can be achieved by something not falling under the scope of the claim must fail.

34. The main request therefore meets the requirements of Article 83 EPC.

Article 54 EPC

35. The respondent cited documents D1 and D2 as anticipating the subject-matter of claim 1.

36. Document D1 discloses the addition of Streptococcus starter cultures to milk fortified by the addition of purines or pyrimidines or the respective ribosides. The effect of these compounds on the metabolic acid production was assayed.

The starter cultures used in document D1 were grown in litmus milk (page 374, left column, "Experimental Procedure") without the addition of any of the compounds listed in claim 1. Milk fortified as indicated was then inoculated with the test culture, i.e. inoculated with a culture grown on litmus milk (page 374, right column, 2nd paragraph). In this context, only the culture grown on litmus milk represents a starter culture.

37. The respondent argued that the term *"starter culture"* was to be understood independent from the context in which the culture was used and that, therefore, also the milk comprising any of the fortifying compounds, once it had been inoculated with the test culture, should be regarded as a starter culture according to claim 1.

38. The board notes that irrespective of the meaning of the term "*starter culture*", there is no evidence that the concentrations of compounds used in D1 indeed had a stabilising effect on the metabolic activity of the bacteria. Thus, the bacterial cultures disclosed in

document D1 do not have all characterizing properties of the subject matter of claim 1.

39. Document D2a provides a short summary of deliberations held by the French committee on food technology and refers to the use of sodium formate in lactic acid bacterial culture concentrates prepared for the inoculation of milk. D2a further discloses the use of sodium formate of up to 5% as an additive to such lactic acid bacterial culture concentrates.

40. The board has no doubt that such culture concentrates have to be held in a container, like for instance a bottle or a test tube. Document D2a does however not mention a container suitable for the distribution of a starter culture to a site of use. It is furthermore not mentioned for what purpose sodium formate is added and, accordingly, the document does not contain any information concerning the results obtained by this addition, let alone information concerning the stability of metabolic activity after storage at low temperatures.

41. According to established case law, if a patent is revoked, or a request is held unallowable, for lack of novelty, the board has to be certain, taking into consideration all the facts and arguments put forward during the proceedings, that its decision is justified (cf. point 16 of decision T 464/94 of 21 Mai 1997).

42. Since neither document D1 nor document D2a disclose subject matter which beyond doubt anticipates the subject matter of claim 1, the main request meets the requirements of Article 54 EPC.

Article 111(1) EPC

43. After the board had indicated that it considered the main request to comply with the requirements of Articles 123(2,3), 84, 83 and 54 EPC, the appellant requested that the case be remitted to the department of first instance for examination in respect of Article 56 EPC.

44. The board has the discretion to either remit the case to the department which was responsible for the appealed decision or exercise any power within the competence of said department (Article 111(1) EPC).

45. The main request differs from the claims as granted merely by the replacement of the term *"packaging"* by the term *"container"*. With regard to all other technical features, the objections raised under Article 56 EPC by the opponent in the opposition and in the appeal procedure remained unchanged, and both parties had already ample opportunity to comment on these objections in writing.

46. Taking into consideration the filing date of the patent which lies in 1999, that a remittal would result in further procedural delays, and finally that both parties have the additional opportunity to present (repeat) their arguments at the oral proceedings before the board of appeal, it is decided to refuse appellant's the request.

47. Article 56 EPC

Document D3 addresses the problem of stabilizing liquid starter cultures. It discloses that cultures of *L. bulgaricus*, grown in the presence of Span 80 and stored

in the presence of 0.1% sodium ascorbate, have increased storage stability as determined by their metabolic acid production (page 1133, ultimate paragraph).

48. Starting from document D3 as closest prior art, the technical problem to be solved is the provision of an alternative stabilized liquid starter culture.

49. The solution to this problem is the culture of claim 1 and the method of claim 7 for obtaining it.

50. As shown by Examples 2 to 4, the addition of sodium formate alone or in combination with IMP has the required stabilising effect on the starter cultures. The board is therefore satisfied that the underlying technical problem has been solved.

51. It remains to be established whether the claimed solution involves an inventive step.

52. The respondent argued that this solution was obvious. Document D3 (page 1132, right column) stated that the reduction of the redox potential of the liquid starter culture by the addition of sodium ascorbate was a possible explanation for the observed increase in storage stability. Reducing the redox potential in an alternative way via the addition of formic acid was obvious in view of the generally known properties of this substance as demonstrated by document D4. Experimental data, submitted as document D12, confirmed that sodium formate had the same effect as sodium ascorbate on the storage stability of the culture.

53. Document D3 discloses that the L. bulgaricus strain 1067 produced considerable amounts of H_2O_2 and that

these amounts were sufficient to explain an inhibitory effect on the growth of the lactic acid bacteria (page 1132, right column). The authors suggest that ascorbate might react with H_2O_2 to reduce its concentration and its inhibitory effect (page 1133, first paragraph).

54. It is known that formic acid reacts with H_2O_2 to produce performic acid, a substance which is used as a disinfectant, i.e. a substance negatively affecting the viability of microorganisms. Thus, a skilled person, knowing from document D3 that the addition of sodium ascorbate has a positive effect on the growth of lactic acid bacteria by reducing the inhibitory effect of H_2O_2, had no reason to expect that the addition of formic acid instead of sodium ascorbate, would have a similarly positive effect.

55. Document D2 mentions the addition of sodium formate to cultures of lactic acid bacteria without giving any reason why this substance is added. The skilled person had therefore no motivation to modify the teaching of document D3 in the light of document D2.

56. The skilled person, starting from document D3 as closest prior art would not have arrived at the claimed solution in an obvious way by combining it with the teaching in document D2 or any other prior art document on file.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent on the basis of the following documents:

   - claims 1 to 13 of the main request filed at the oral proceedings,
   - description pages 4 to 8 and 14 filed during the oral proceedings,
   - pages 1 and 9 to 13 of the patent as granted, and
   - figures 1 to 5 of the patent as granted.

The Registrar: The Chairman:

L. Malécot-Grob M. Wieser

Decision electronically authenticated