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D E C I S I O N
of 17 June 2002

Case Number: T 1148/00 - 3.3.4

Application Number: 93920869.0

Publication Number: 0678120

IPC: C12C 1/02

Language of the proceedings: EN

Title of invention:

Procedure for treatment of seed material to be germinated

Applicant:

OY PANIMOLABORATORIO - BRYGGERILABORATORIUM AB

Opponent:

-

Headword:

Seed material/OY PANIMOLABORATORIO

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step"

Decisions cited:

-

Catchword:

-



Case Number: T 1148/00 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 17 June 2002

Appellant: OY PANIMOLABORATORIO - BRYGGERILABORATORIUM
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Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 28 April 2000
refusing European patent application
No. 93 920 869.0 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairwoman: F. L. Davison-Brunel
Members: A. L. L. Marie
V. Di Cerbo

Summary of Facts and Submissions

I. The appeal lies from the decision of the Examining Division to refuse the European patent application No. 93 920 869.0 with the international publication No. WO 94/16053 and the title "Procedure for treatment of seed material to be germinated".

The original Applicants were Oy Panimolaboratorio-Bryggerilaboratorium Ab. During the examination procedure, the application was assigned to Quest International Nederland BV.

II. The Examining Division came to the conclusion that claims 1 and 2 then on file lacked novelty over the teaching of document (4) (see below) while claims 3 to 5 lacked inventive step, document (4) being the closest prior art.

III. The Assignees filed a notice of appeal, paid the appeal fee and filed a statement of grounds of appeal. It was requested that the Board set aside the decision under appeal and grant a patent on the basis of the application "in the form presently on file".

IV. The Board sent a communication pursuant to Article 11(2) of the Rules of procedure of the Boards of Appeal conveying its preliminary non-binding opinion, together with the summons to oral proceedings.

V. The application was assigned back to the original Applicants who informed the Board with the letter dated 13 Mai 2002 that they would not attend oral proceedings

and that a decision should be reached in accordance with the state of the file. A new set of three claims was submitted in replacement of the set of claims on file.

Claim 1 of the new request read as follows:

"1. A procedure for treatment of seed material to be germinated, characterized in that to the barley kernels in a malting process or seed material going to be converted to sprouts intended to serve as nutrition, is added in connection with the germinated process, a lactic acid bacteria preparation or a preparation produced by lactic acid bacteria derived from species Lactobacillus plantarum (DSM 7388) which has an effect inhibiting microbial growth."

Claim 2 related to the further feature of the process of claim 1 that the lactic acid bacteria preparation or the preparation produced by lactic acid bacteria derived from species **Lactobacillus plantarum** (DSM 7388) had an effect inhibiting the growth of **Fusarium** moulds. Claim 3 related to the further feature of the process of claim 2 that either preparation was added in the steeping step or in the germination step.

- VI. The document which is referred to in the present decision is document (4): EP-A-0 162 805.
- VII. The arguments by the Appellants (Applicants) may be summarized as follows:
- The subject-matter of claims 1 to 3 was novel as the prior art did not disclose the specific **Lactobacillus** species with which the claimed

process was to be carried out.

- The inventive step of the claimed process resided in the excellent microbicidal activity and/or inhibitory properties of **Lactobacillus plantarum** DSM 7388:

Table 1 showed that its microbicidal activity as measured by the disk method was 12 to 26% higher than that of other tested species.

Tables 2 and 3 showed that its microbicidal activity against **Fusarium** moulds inducing beer gushing was the best.

Figure 6 showed that it was better than another lactobacillus at improving mash filtration.

Table 4 confirmed that it caused inhibition of the growth of food stuff pathogens and microbes detrimental to foodstuff.

Example 5 confirmed its excellent inhibitory effect on the microflora of malting, filtration of mash and on malt quality.

- VIII. The Appellants requested that the decision of the Examining Division be set aside and that a patent be granted on the basis of the set of three claims filed with their letter dated 13 May 2002.

Reasons for the Decision

Claim request filed with letter dated 13 Mai 2002

Formal requirements; Articles 123(2) and 84 EPC

1. A basis for the subject-matter of claims 1 to 3 is found in the application as filed in the passage bridging page 5, line 34 to page 6 line 5 as well as page 6, lines 13 to 18 and page 10, lines 29 and 30. The requirements of Article 123(2) EPC are fulfilled.
2. In the light of the description, in particular Example 5, it is clear that the term "...derived from species Lactobacillus plantarum (DSM 7388)..." in the expression "... a lactic acid bacteria preparation or a preparation produced by lactic acid bacteria derived from species Lactobacillus plantarum (DSM 7388)..." applies to the lactic acid bacteria preparation as well as to the preparation produced by lactic acid bacteria. Claims 1 to 3 fulfill the requirements of Article 84 EPC.

Novelty; Article 54 EPC

3. No documents of the state of the art on file disclose a procedure for treatment of seed material wherein the seeds are treated with **Lactobacillus plantarum** DSM 7388 in connection with the germination step. The subject-matter of claims 1 to 3 is novel (Article 54 EPC).

Inventive step; Article 56 EPC

4. The closest prior art is document (4) which describes a process for the **conservation** of germinated seeds which includes treating these seeds with lactic acid bacteria

(lactobacilli or lactic streptococci) **after germination has taken place** (page 6, lines 1 to 11, page 11, lines 8 to 11). This treatment is said to eliminate the need for sterilisation (see, for example, page 12, lines 7 to 10) ie it prevents the multiplication of unwanted microbes.

5. Starting from the closest prior art, the problem to be solved may be defined as setting up a process for **producing** germinated seeds free of contamination.
6. The solution provided is to treat the seeds **in connection with the germination process** with a specific lactic acid bacteria: **Lactobacillus plantarum** DSM 7388.
7. In the Board's judgment, the person skilled in the art aware from document (4) of the inhibitory effect of lactic acid bacteria on microbes likely to develop on germinated seeds and wanting to prevent microbial development during germination would find it obvious to try and use lactic acid bacteria for their purpose; all the more so, that the state of the art does not report any deleterious effect of lactic acid bacteria on the germination process per se and that testing the properties of these bacteria in this respect (ie adding them to seeds at the onset of germination) is a matter of routine experimentation. Thus, the use of lactic bacteria in a process for producing germinated seeds, in order to inhibit microbial growth is not considered to involve inventive skills.
8. The Appellants argued that the specific **Lactobacillus** strain (DSM 7388) with which the claimed process is to be carried out had surprisingly good inhibitory

properties which justified acknowledging inventive step.

9. The inhibitory properties of **Lactobacillus plantarum** DSM 7388 are described in the examples given in the patent application:

- Table 2 shows that **Lactobacillus plantarum** DSM 7388 (identified in the table as **Lactobacillus** E-76) has the same inhibitory effect as two other lactobacilli strains: **Lactobacillus curvatus** E-391 and **Lactobacillus plantarum** E-98, against all gram-negative bacteria tested including **Enterobacter agglonerans**, said effect being measured by the turbidometric method. Using the disk method (Table 1), 12% more inhibition of **Enterobacter agglomerans** is achieved with **Lactobacillus plantarum** DSM 7388 than with **Lactobacillus plantarum** E-98 (**Lactobacillus curvatus** not being tested). This effect being quite small and not observed by the turbidometric method, it is not considered to be meaningful.

- Figure 6 shows the results of an experiment wherein the effect of **Lactobacillus plantarum** DSM 7388 and **Lactobacillus plantarum** E-98, of suppressing retard in mash filtration is tested. As this retard is known to be caused by gram-negative bacteria (see Legend to Table 2), the experiment is an indirect measurement of the inhibitory effect of both lactobacilli on said bacteria. From studying the curves depicting the amount of filtrated mash as a function of time, it is not evident that when the seeds used to produce the mash have been treated

with **Lactobacillus plantarum** DSM 7388 or with **Lactobacillus plantarum** E-98 (curves F and G), the delay in mash filtration is significantly reduced compared with the delay observed in the controls (curves A and B) which the Board takes to be representative of the time needed for mash filtration when the seeds used to produce the mash have not been treated with lactic acid bacteria. Alternatively, if the control curve is that labelled "poor", then it must be concluded that both **Lactobacillus plantarum** DSM 7388 and E-98 suppress this delay to about the same extent.

- The inhibitory effects of **Lactobacillus plantarum** DSM 7388 and E-98 and of **Lactobacillus curvatus** E-391 on **Aspergillus niger** are about identical (Table 2). DSM 7388 is better than **Lactobacillus curvatus** E-391 at inhibiting the growth of Fusarium moulds. Its performance, however, is only slightly better than that of **Lactobacillus plantarum** E-98, there being on average 5% more inhibition with the earlier strain, the data being obtained by the turbidometric method (Table 2). When compared by visual examination (Table 3), **Lactobacillus plantarum** DSM 7388 and E-98 are found to have the same inhibitory activity on three out of four of the tested Fusarium moulds.

Thus, the properties of **Lactobacillus plantarum** DSM 7388 are either identical or essentially similar to those of one out of the two other strains of lactobacilli tested. They cannot be considered surprising properties for a **Lactobacillus**.

10. Lactic streptococci of the genus **Pediococcus** have essentially the same inhibitory effect on gram-negative bacteria than **Lactobacillus plantarum** DSM 7388 (Tables 2 and 4). They are mostly less efficient than **Lactobacillus plantarum** DSM 7388 or E-98 at inhibiting moulds (Table 2) except for **Pediococcus pentosaceus** DSM 7389 which appears to have similar inhibiting properties as **Lactobacillus plantarum** DSM 7388 on the microflora of malting according to the results obtained in Example 5.

11. From the findings in points 7, 9 and 10, the Board draws the following conclusion:

- the skilled person wanting to produce germinated seeds free of contamination had the choice (obvious from document (4)) to treat the seeds to be germinated either with lactobacilli or with lactic streptococci. Applying this treatment does not in itself require inventive skill. In doing so, he/she would find out in a straightforward manner that lactobacilli are more efficient than most lactic streptococci against moulds and, thus, would obviously retain lactobacilli as the genus of choice.
- The specific lactobacillus (DSM 7388) used in the claimed process does not exhibit surprising properties.

For these reasons, the process of claim 1 which involves treating seeds to be germinated with this lactobacillus to produce germinated seeds free of contamination is not inventive.

12. Claims 1 to 3 do not fulfill the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairwoman:

P. Cremona

F. Davison-Brunel