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D E C I S I O N
of 17 September 1997

Case Number: T 0065/94 - 3.3.4

Application Number: 85109590.1

Publication Number: 171026

IPC: A23K 1/16

Language of the proceedings: EN

Title of invention:
Livestock feed containing inulo-oligosaccharides and breeding of livestock by using the same

Patentee:
MEIJI SEIKA KAISHA LTD.

Opponent:
TIENSE SUIKERRAFINADERIJ / RAFFINERIE TIRLEMONTOISE

Headword:
Livestock Feedstuffs/MEIJI SEIKA KAISHA LTD.

Relevant legal provisions:
EPC Art. 114(2), 83, 56

Keyword:
"Admissibility of new documents (yes)"
"Sufficiency of disclosure (yes)"
"Inventive step (no)"

Decisions cited:
T 0438/91, G 0001/95, G 0007/95, T 0142/84

Catchword:
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Case Number: T 0065/94 - 3.3.4

D E C I S I O N
of the Technical Board of Appeal 3.3.4
of 17 September 1997

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 15 November 1993 rejecting the opposition filed against European patent No. 0 171 026 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: L. Galligani
Members: D. D. Harkness
J.-C. Saisset

Summary of Facts and Submissions

I. European patent No. 0 171 026 relating to "Livestock feed containing inulo-oligosaccharides and breeding of livestock by using the same" was granted on 2 October 1991 on the basis of patent application No. 85 109 590.1 filed on 30 July 1985. Claims 1 and 2 thereof read as follows:

"1. Livestock feed containing sugar composed mainly of inulo-oligosaccharides in an amount of 0.1 to 10% in which 1 to 5 fructose units are linked together to ß-1.2 linkage.

2. A method of breeding livestock by using a livestock feed containing a sugar composed mainly of inulo-oligosaccharides in an amount of 0.1 to 10% in which 1 to 5 fructose units are linked together to ß-1.2 linkage."

II. An opposition was filed against the patent by the Appellant (Opponent) based on Article 100(a) and (b) EPC, requesting revocation on the grounds of lack of inventive step (Article 56 EPC) and insufficiency of disclosure (Article 83 EPC).

III. On 15 November 1993 the Opposition Division issued a decision whereby the opposition was rejected pursuant to Article 102(2) EPC.

The Opposition Division considered that the skilled person would have had no difficulties in carrying out the invention as claimed and that the cited prior art did not contain any teaching or suggestion which would render the claimed subject-matter obvious.

IV. The parties relied inter alia on the following documents:

(5) GB-A-1 499 717,
(6) CS-A-206 767 (English translation),
(11) Zucker, 29(3), (1976), 121-123
(12) Bifidobacteria Microflora, volume 2(1)(1983), 3-16

V. On the 14 January 1994 the Appellant lodged an appeal against the decision of the Opposition Division and paid the required fee. He filed the statement of grounds on 15 March 1994.

VI. The Respondent (Patentee) replied to the appeal in a letter dated 22 September 1994. He referred inter alia to pages 3 and 9 of a new document namely,

(13) Bifidobacteria Microflora, volume 1(1), 1982, 3-24.

VII. In a further submission dated 25 September 1996 the Appellant referred to new documents (14 to 17) and to decision T 438/91 of 17 October 1994 which disallowed under Article 52(4) EPC a claim to a method of breeding domestic animals, which method remedied scours and led to an increase in the weight of the animals. This method was similar to that of claim 2 of the opposed patent.

The new documents were:

(14) Japanese Veterinary Journal, 29, (1976), 439-442
(15) Bifidobacteria Microflora, volume 2(1), 1983, 41-55
(16) Bifidobacteria Microflora, volume 1(1), 1982, 39-44
(17) Chem.Pharm.Bull. 26(11), 1978, 3306-3311.

VIII. In a communication pursuant to Article 11(2) of the Rules of procedure of the Boards of Appeal the Board gave its provisional opinion on the Articles 83 and 56 EPC issues and requested the Respondent to indicate his intentions with respect to the new ground of opposition raised with reference to decision T 438/91.

IX. In a further letter dated 17 July 1997 the Respondent refused to give his consent to the introduction of the new ground of appeal (cf Enlarged Board of Appeal decisions G 1/95 and G 7/95 OJ EPO 1995 615 and 626, respectively) and objected to the introduction into the proceedings of documents (11), (12), and (14) to (17) because they were filed outside the nine month opposition period, Article 114(2) EPC. In order to reply to the arguments based in particular on documents (16) and (17) the Respondent filed the following further document,

(18) "Classification and ecology of intestinal flora", Zaidanhojin Shokuseikatsu Kenkyukai, 30 March 1986, pages 106, 107, 112, 121 and 142.

X. Oral proceedings took place on 17 September 1997.

XI. The Appellant argued essentially as follows:

In view of the Respondent's written refusal to accept the introduction of new ground of appeal raised under Article 52(4) EPC this point was not pursued further.

As for the late filing of documents, all the parties involved knew about this prior art well in advance of the oral proceedings and their contents were known to the Respondent as they were cited in a previous case between the same parties before the Board.

It was submitted that the patent description did not properly teach the skilled person how to provide a feed additive sugar having at least 50%, ie mainly, inulo-oligosaccharides, and that as a result it was not possible to manufacture a livestock feed as claimed.

The nearest prior art for Article 56 purposes was document (5) because this document solved the problem of providing a new feed suitable for both humans and animals, which feed contained lactulose as a bifidus factor and according to results in tables 10 and 13 showed that an animal fed with the feedstuff increased both in weight and the count of bifidobacterium. These results therefore showed that the use of a bifidus factor leads to a simultaneous weight increase as well as to an improved bifidobacteria count, see document (5) page 16 lines 1 to 18. It would therefore be obvious for a skilled person to use other alternative bifidus factors in place of lactulose to produce the same effects. Documents (16) and (17) both related to finding sugar sources which were useful as bifidus factors and the results of the investigation according to document (16) showed that inulin oligomers (4- to 25-saccharides) were used by Bifidobacterium infantis. Further, inulin oligomers showed a generation time as short as that for lactose and at page 42 column 2 there was a specific reference to inulotetraose. Document (17) which is referred to in document (16) drew the conclusion that inulin of lower molecular weight (less than 4500) was very specific in its activity with B. infantis and oligosaccharides from inulin were at least as specific as raffinose or stachyose. Therefore it was obvious that hydrolysed inulin would be effective in the treatment of scours and for the purpose of improving weight gain.

If there was not a bifidus factor effect when the specified inulo-oligosaccharides were used, then the nearest prior art was document (6) which described a process for treating inulin containing foodstuffs with inulase which converted the inulin into a more digestible form by hydrolysis, thus enabling a higher calorific value to be achieved for the feedstuff. This modified feedstuff which was suitable for human or animal consumption would then result in a weight increase in humans and animals not attainable using the untreated inulin.

XII. The Respondent's arguments were essentially as follows:

There was no reason for the Appellant to file new documents after the recognised time limit because all the cited documents were known to the parties having been discussed in an earlier case before the Board. The late filing could not therefore be allowed as it was possible for the Appellant to have filed them earlier and in good time.

It was disputed that the specification did not disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in this art. In particular from Example 1 it was perfectly clear to a skilled man how to perform the invention.

The claimed subject matter was inventive because the features of the claims were not obviously derivable from the prior art. No combination of documents existed which disclosed all the specific features of the claims.

It was the intention of the patent to provide a feed which would avoid scours but primarily the problem was to achieve a weight increase in the animals fed with the claimed feedstuff. There was no reason to assume that the inulo-oligosaccharides necessarily acted as a bifidus factor. Document (6) was considered to be the nearest prior art. This document provided a feed suitable for humans and animals which feed contained hydrolysed inulin and was of higher calorific value than the inulin-containing feed which had not been treated with inulase, but however the hydrolysis product was not defined as in the claims at issue.

If a bifidus factor effect was present then there was no reason to combine the documents (5) and (16) because document (16) did not give any indication of the particular inulin-oligosaccharide mixture as claimed, nor was there any reference to weight increases and Bifidus infantis was not to be found in animals. Also document (16) required the use of a pre-sugar for the process to be viable. The evidence in document (16) with respect to the preferred use of raffinose in feed for mice was not conclusive of any effects which inulo-oligosaccharides might have in the presence of Bifidus infantis. Document (18) showed that the predominant bacteria in animals was not a bifidus strain, and therefore it would not be taken from document (16) that such a strain would be of use in animals.

XIII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained.

Reasons for the Decision

1. *Admissibility of new documents, Article 114(2) EPC*

The Board admitted documents (11), (12), and (14) to (17) into the proceedings because they were highly relevant to the claimed subject-matter. Of them document (11) was filed at the oral proceedings before the opposition division, document (12) with the grounds of appeal, and documents (14) to (17) practically one year before the oral proceedings before the Board. Therefore there was ample time for all parties to consider them and there was no element of surprise for the Respondent. This view is in agreement with the established jurisprudence of the Boards of Appeal cf, in particular T 142/84 (OJ 1987, 112, point 2 of the reasons).

2. *Sufficiency of disclosure, Article 83 EPC*

Claims 1 and 2 specify that the inulo-oligosaccharides present are mainly those having 1 to 5 fructose units linked as stated. As outlined in the description such oligosaccharides are those obtained by partial hydrolysis of inulin using either enzymes or dilute acids. The word "mainly" in the claims ensures that any hydrolysis product representing a small divergence from an optimum hydrolysis product is also included in the claims. Although the description of this process is very general, it is sufficiently clear for a skilled person who by way of conventional measures is able to prepare the required mixture of inulo-oligosaccharides which are the simple products of inulin hydrolysis using enzyme or dilute acid, there being no restrictions as to how said hydrolyses are carried out.

3. *Inventive step, Article 56 EPC*

3.1 At oral proceedings the Respondent stated that the main purpose of the invention was to increase the weight of animals fed with the feed, however it was also intended to avoid scours as well but this was not a primary function of the feed. Thus the examination for the presence of an inventive step can be carried out from two different starting points, namely, from the teaching of document (5) if a bifidus factor effect is taken into account, or alternatively, from document (6) if the latter effect is not considered.

3.2 First case.

The closest prior art.

Document (5) relates to feedstuffs containing lactulose, a derivative of lactose, as bifidus factor. Use of these feeds and their bifidus factor activity for both humans and animals is referred to on page 1, lines 21 to 28. At page 16, lines 1 to 18 it is indicated that a feed containing 1,68% of lactulose (see tables 8 and 9) when given to pigs resulted in both a weight increase and predominance of Bifidobacterium over Enterobacteriae which would reduce scours.

The technical problem.

Starting from this document, the problem to be solved is seen in the provision of an alternative feed for animals which is at least as effective in terms of improvement in weight increase and intestinal flora as that of document (5).

The solution proposed.

The solution to this problem lay in the provision of the feed according to claim 1 which contains as additive from 0,1 to 10,0% inulo-oligosaccharides having 1 to 5 fructose units linked as stated, and in breeding animals using said feed (claim 2).

Assessment of inventive step.

The relevant question for the assessment of inventive step is whether the skilled person would have replaced in a feed according to document (5) the lactulose powder by the inulin-oligosaccharides used in the present case. When faced with the problem of finding an alternative livestock feed for the one known from document (5), the skilled person would have considered the teaching of documents (16) and/or (17).

Document (16) relates to a search for a sugar source for selective increase of bifidobacteria. Bifidobacterium infantis and Bifidobacterium breve are used as examples of bifidobacteria (see page 40, left hand column, first paragraph). Table 1 on page 40 reports inter alia lactulose and inulin as remarkably useful for the growth of B. infantis. At page 41, column 1 it is stated that bifidobacterium uses the mono- and all oligo-saccharides of inulin hydrolysate. Table 5 shows that inulo-tetraose was consumed by B. infantis, this being a very specific function when inulin was employed as a sugar for preculture. According to page 43, column 1, B. infantis (origin human) was grown in mice which demonstrates that bifidus bacteriae of human origin do successfully proliferate also in animals.

Document (17) (referred to in document (16)) describes on page 3307 the acidic hydrolysis of inulin. This document also contains several references to the usefulness of inulin hydrolysates and inulo-oligosacharides as a source of sugars used selectively by bifidobacteria, in particular the discussion on pages 3310 and 3311, the latter indicating that inulo-oligosaccharides are specific in their action. Figures 3, 4 and 5 show the use of inulin hydrolysate for the growth of bifidobacteria.

In the board's judgment, the teaching of document (16) would have readily suggested to the skilled person to substitute the products of inulin hydrolysis for the lactulose powder of document (5) in the amounts specified therein. Thereby the skilled person would have also had a reasonable expectation of success in achieving a weight increase and a reduction in scours.

3.3 Second case.

The closest prior art.

Document (6) relates to a process for treating foodstuffs containing inulin which leads to a breakdown of inulin by hydrolysis employing inulase which is administered concomitantly with the foodstuff or shortly thereafter, to thereby produce inulo-oligosaccharides and increase the calorific value of said foodstuff. This process is said to improve the nutritional value of food suitable for both humans and animals and would therefore result in an increase in weight in those who ate it.

The technical problem.

The problem to be solved having regard to document (6) is to provide an alternative form of inulin-based feedstuff to that of document (6).

The solution proposed.

The solution to this problem is the same as the solution to the first problem above.

Assessment of inventive step.

When faced with the stated technical problem, the skilled person starting from document (6) would have readily envisaged the alternative possibility of hydrolysing inulin with inulase before the inulin-based feedstuff is ingested. This is a measure which does not require any special skill or the effect of which would be uncertain. By adopting this measure the skilled person would have obtained a feedstuff falling within the terms of the claims because, as stated above under the heading "Sufficiency of disclosure", such hydrolysis would produce a sugar mixture composed mainly of inulo-oligosaccharides in which 1 to 5 fructose units are linked together. In the Board's opinion, an amount of 0,1 to 10,0% of inulo-oligosaccharide does not impart inventive merit to the claimed subject-matter because such amounts of additive are conventional for the skilled person. In particular the example of document (5) employs 1,68% of lactulose in the feedstuff.

3.4 For the reasons given above, the Board is of the opinion that the subject-matter of claims 1 and 2 does not involve an inventive step, (Article 56 EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

D. Spigarelli L. Galligani