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Datasheet for the decision of 13 February 2020

Case Number: T 1177/17 - 3.3.01

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Language of the proceedings: EN

Title of invention:
Fucosyllactose as breast milk identical non-digestible oligosaccharide for treating and/or preventing viral infections

Patent Proprietor:
N.V. Nutricia

Opponents:
Abbott Laboratories
Société des Produits Nestlé S.A.

Headword:
Fucosyllactose for treating and/or preventing viral infections / NUTRICIA

Relevant legal provisions:
EPC Art. 56
RPBA Art. 12(4)

Keyword:
Inventive step - all requests (no)

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Case Number: T 1177/17 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 13 February 2020

Appellant: (Opponent 1)	Abbott Laboratories 100 Abbott Park Rd. Abbott Park, IL 60064-6004 (US)
Representative:	Boult Wade Tennant LLP Salisbury Square House 8 Salisbury Square London EC4Y 8AP (GB)
Appellant: (Opponent 2)	Société des Produits Nestlé S.A. Avenue Nestlé 55 1800 Vevey (CH)
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Respondent: (Patent Proprietor)	N.V. Nutricia Eerste Stationsstraat 186 2712 HM Zoetermeer (NL)
Representative:	Nederlandsch Octrooibureau P.O. Box 29720 2502 LS The Hague (NL)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 11 April 2017 rejecting the oppositions filed against European patent No. 2453901 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairwoman	M. Pregetter
Members:	S. Albrecht
	R. Romandini

Summary of Facts and Submissions

I. European patent No. 2 453 901 was granted on the basis of a set of eight claims.

Independent claim 1 as granted reads as follows:

"Use of 2'-fucosyllactose in the manufacture of an enteral composition, said composition not being human milk, for treating and/or preventing viral infections caused by orthomyxoviridae, herpesviridae, rotavirus, cytomegalovirus, respiratory syncytial virus, human immunodeficiency virus and/or rhinovirus."

II. The patent was opposed by two opponents on the grounds that its subject-matter lacked novelty and inventive step, that it was not sufficiently disclosed and that it extended beyond the content of the application as filed.

The documents filed during the opposition proceedings included the following:

D2: EP 1 629 850 A1
D3: WO 2005/055944 A2
D4: Grollman et al., The Journal of Biological Chemistry, vol. 240, No. 3, March 1965, pages 975 to 981

III. Both opponents (hereinafter "appellants") lodged an appeal against the opposition division's decision to reject the oppositions.

IV. In the decision under appeal, the opposition division acknowledged inventive step on the basis of document D2

as the closest prior art, particularly its disclosure relating to the use of fucosyllactose for the treatment of respiratory tract infections caused by the respiratory syncytial virus (hereinafter "RSV"). The subject-matter of claim 1 differed from this teaching in that the active agent was a specific type of fucosyllactose, namely 2'-fucosyllactose (hereinafter "2-FL"). The technical effect linked to this difference was general immunostimulatory activity in terms of an increase in the number and activity of natural killer cells (hereinafter "NK cells"), as evidenced by example 1 of the patent. By means of this activity, 2-FL provided for broad, virus-unspecific antiviral activity. Accordingly, the objective technical problem was to be considered as the provision of a specific galactooligosaccharide having a broad antiviral action against the viral infections recited in claim 1. The solution proposed by the patent was not rendered obvious by the prior art. In particular, D2 did not contain any pointer to the immunostimulating effects of 2-FL demonstrated in the patent. Hence the skilled person would not have had any motivation to select fucosyllactose, let alone 2-FL, in order to solve the technical problem as posed.

V. With the statements setting out the grounds of appeal the appellants requested that the decision under appeal be set aside and that the patent be revoked.

VI. With a letter dated 3 January 2018, the patent proprietor (hereinafter "the respondent") replied to the statements setting out the grounds of appeal. In this letter, the respondent requested as its main request that the appeals be dismissed (i.e. that the patent be maintained as granted) or, in the alternative, that the patent be maintained as amended

on the basis of one of the sets of claims of auxiliary requests 1 to 5 filed with that letter.

Claim 1 of auxiliary request 2 differs from claim 1 of the main request in that the claimed diseases are restricted to viral infections caused by orthomyxoviridae.

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 2 in that it comprises the following additional feature:

"and wherein the composition comprises 0.07 to 1 wt% fucosyllactose based on dry weight of the composition".

VII. In a communication pursuant to Article 15(1) RPBA 2020 dated 3 January 2020, the board addressed *inter alia* the issue of inventive step, and raised the question of whether or not the technical effect relied upon by the respondent could be accepted as being achievable across substantially the whole scope of the claims and consequently taken into account in the formulation of the objective technical problem posed (see point 2.4.3 of the board's communication).

VIII. Oral proceedings took place before the board on 13 February 2020 in the presence of all parties. In the course of these proceedings, the respondent withdrew auxiliary requests 1, 3 and 4. The issues discussed in these proceedings included in particular the following:

(a) whether claim 1 of the main request complied with the requirements of Article 123(2) EPC and Article 56 EPC;

(b) whether auxiliary requests 2 and 5 should be admitted into the appeal proceedings;

(c) whether claim 1 of auxiliary requests 2 and 5 involved an inventive step pursuant to Article 56 EPC.

At the end of the oral proceedings, the chairwoman announced the board's decision.

IX. The appellants' arguments in relation to inventive step and relevant for the present decision can be summarised as follows.

Main request

Claim 1 of this request differed from the closest prior art, D2, in that it required the fucosyllactose to be 2-FL. In the absence of any comparative data on file vis-à-vis the sole other known fucosyllactose, 3'-fucosyllactose (hereinafter "3-FL"), no particular technical effect could be attributed to 2-FL. Example 1 of the patent in suit, relied upon by the respondent in this regard, provided support solely for the purported NK-cell-stimulatory activity of 2-FL in the context of a specific vaccination study but failed to demonstrate the alleged link between this activity and the claimed therapeutic effects, i.e. the treatment and/or prevention of viral infections caused by the list of viruses recited in claim 1. Accordingly, the technical effects postulated by the respondent were not plausible across the whole scope of claim 1 of the main request and could therefore not be taken into account in the formulation of the objective technical problem. The problem was thus to be worded as the provision of a specific fucosyllactose for the treatment and/or

prevention of viral infections caused by RSV, among other viruses. The proposed solution, i.e. 2-FL, was an arbitrary choice devoid of any inventive merit. In particular, the skilled person was well aware of the fact that there were only two known fucosyllactoses, namely 2-FL and 3-FL, as evidenced by document D4. Furthermore, it was known for instance from document D3 that 2-FL was the most prevalent fucosyllactose in human milk. In light of these facts, 2-FL would have been the skilled person's natural choice.

Auxiliary requests 2 and 5

The amendments made to claim 1 of auxiliary requests 2 and 5 were not able to overcome the lack of inventive step observed for the main request in view of the fact that paragraph 0032 of D2 explicitly referred to infections caused by orthomyxoviridae.

X. The respondent's arguments in relation to inventive step and relevant for the present decision can be summarised as follows.

Main request

Claim 1 of this request differed from the closest prior art, D2, in that the galactose-containing oligosaccharide was 2-FL. The technical effect linked to this difference was NK-cell-stimulatory activity in response to viral infections, as evidenced by example 1 of the patent in suit. By means of this immunomodulatory mode of action, 2-FL achieved increased resistance against viral infections in general, i.e. it exhibited antiviral activity against a broad group of viruses. The information contained in example 1 rendered these technical effects plausible

across the whole scope of claim 1, and the appellants had not provided any evidence to the contrary. Accordingly, the objective technical problem to be solved by the claimed invention was the provision of a more general therapy for a broader group of viruses than RSV mentioned in D2. The proposed solution – 2-FL – was not rendered obvious by the cited prior art. In particular, D2 did not contain any pointer to the NK-cell-stimulating effects of 2-FL demonstrated in the patent in suit. Accordingly, the skilled person would not have had any incentive to select 2-FL in order to solve the technical problem posed.

Auxiliary requests 2 and 5

The subject-matter of claim 1 of these requests differed from D2 in terms of the active agent and the infectious diseases to be treated and/or prevented, i.e. viral infections caused by orthomyxoviridae. On the basis of the experimental data provided in example 1 of the patent in suit, the objective technical problem was to be formulated as the provision of a therapy for a specific virus that caused the respiratory tract infections disclosed in D2. The claimed solution was not rendered obvious by D2 since that document did not contain any pointer that would have prompted the skilled person to specifically select fucosyllactose from among the disclosed oligosaccharides. The same held true if the objective technical problem were formulated as the provision of an alternative treatment of viral infections caused by orthomyxoviridae.

XI. The parties' final requests as far as relevant for the present decision were as follows.

Both appellants requested that the decision under appeal be set aside and that the patent be revoked. The appellants further requested that auxiliary requests 2 and 5 not be admitted into the appeal proceedings.

The respondent requested that the appeals be dismissed or, as an auxiliary measure, that the decision under appeal be set aside and that the patent be maintained as amended on the basis of one of auxiliary requests 2 and 5 filed with its reply to the statements setting out the grounds of appeal.

Reasons for the Decision

Admission of auxiliary requests 2 and 5 - Article 12(4) RPBA 2007

1. The respondent filed auxiliary requests 2 and 5 with its reply to the statements setting out the grounds of appeal. Thus, according to Article 12(1) RPBA 2020, these requests form part of the basis of the appeal proceedings unless the board exercises its discretion under Article 12(4) RPBA 2007 (see Art. 25(2) RPBA 2020) not to admit these into the proceedings.

2. The board considers the filing of these requests to constitute a timely, legitimate reaction to the appeal briefs and hence sees no reason not to admit these requests into the proceedings pursuant to Article 12(4) RPBA 2007.

3. In view of the outcome of the appeal proceedings, a detailed reasoning on the admission of these requests

is not necessary.

Main request - claim 1 as granted

4. Article 100(a) EPC in conjunction with Article 56 EPC

4.1 The claimed subject-matter

4.1.1 Claim 1 is drafted in the Swiss-type format and relates to the use of 2-FL in the manufacture of an enteral composition, said composition not being human milk, for treating and/or preventing viral infections caused *inter alia* by RSV.

4.2 The closest prior art

4.2.1 As held by the opposition division and in agreement with the parties, the board considers D2 to be the closest prior art.

4.2.2 This document pertains to the treatment and/or prevention of respiratory tract infections by means of administration of an enteral composition,

(a) wherein the composition comprises a galactose-containing indigestible oligosaccharide and at least 5 wt.% digestible saccharide (see paragraph 0015), and

(b) wherein the composition does not consist of human milk (see paragraph 0041).

The galactose-containing indigestible oligosaccharide is preferably selected from the group of compounds recited in the first sentence of paragraph 0019. This

group consists of seven members in total and includes fucosyllactose.

The respiratory tract infections referred to in D2 are preferably caused by one of the infectious agents listed in paragraph 0032. In a particularly preferred embodiment, these infections are caused by RSV (see last sentence of paragraph 0032).

4.2.3 Accordingly, the board considers that the embodiment of D2 coming closest to the claimed invention is the use of fucosyllactose for the treatment and/or prevention of RSV.

4.2.4 The respondent contended that the disclosure of D2 relating to fucosyllactose was not enabling. In support of its argument, the respondent referred to the examination proceedings for D2, a European patent application filed in its name, but did not substantiate this assertion. Therefore, this argument does not convince the board.

4.2.5 The subject-matter of claim 1 differs from the closest prior art in that the fucosyllactose is 2-FL.

4.3 Objective technical problem and solution

4.3.1 In order to formulate the objective technical problem, it is necessary to establish the technical effect(s) achieved by the aforementioned distinguishing feature.

4.3.2 On the basis of the experimental data contained in example 1 of the patent in suit, the respondent submitted that 2-FL increased the number and activity of NK cells in response to viral infections, the observed increases being higher than with any of the

other oligosaccharides tested in example 1, which included a mixture of a beta-galactooligosaccharide (hereinafter "GOS"), a fructooligosaccharide (hereinafter "FOS") and a galacturonic acid oligosaccharide (hereinafter "AOS") very similar to the transgalactooligosaccharide/FOS mixture described in example 6 of the closest prior art. By means of these immunomodulatory effects, 2-FL achieved increased resistance against viral infections in general, i.e. it exhibited antiviral activity against a broad group of viruses. Accordingly, the objective technical problem to be solved by the claimed invention was the provision of a more general therapy for a broader group of viruses than RSV mentioned in D2.

4.3.3 While the appellants did not dispute the validity of the data contained in example 1 of the patent in suit, they submitted that there was no evidence supporting the alleged link between the immunomodulatory effects of 2-FL shown in the mentioned example and the compound's activity against infections caused by the list of viruses recited in claim 1 of the main request.

4.3.4 Accordingly, it needs to be established whether the disclosure of example 1 renders the alleged, indirect antiviral activity of 2-FL by means of NK cell stimulation (see point 4.3.2 above) credible or at least plausible over substantially the whole scope of claim 1 of the main request.

4.3.5 Example 1 of the patent in suit pertains to a study in mice vaccinated with Influvac (an influenza vaccine; see paragraph 0048). The test animals received either a control diet or a diet supplemented with the following

respective oligosaccharides:

(a) 2 wt% of a mixture of GOS, FOS and AOS,

(b) 1 wt% lactoneotetraose,

(c) 1 wt% 3'-sialyllactose,

(d) 1 wt% 2-FL.

Diet supplementation with 2-FL resulted in a significant increase in NK cell number and activity compared with control-fed animals (see experimental data in Table 1 in paragraph 0052). Hence, in the board's judgement, example 1 credibly shows that dietary 2-FL augments the NK-cell-stimulating effects of the Influvac vaccine in the tested animals and thus contributes to the effective protection of these animals against infections caused by influenza viruses.

4.3.6 Claim 1, however, does not require 2-FL to be used in combination with a vaccine. Accordingly, the question arises as to whether 2-FL, by itself, can provide for the claimed indirect antiviral effects by means of NK cell stimulation, as alleged by the respondent.

4.3.7 In the board's judgement, it cannot. The board does not dispute that NK cells play an important role in the natural defence against viral infections, as indicated in paragraphs 0014 and 0041 of the patent in suit. The board also accepts that it is plausible that the claimed infections may be treated and/or prevented through an adequate degree of NK cell stimulation. However, there is no evidence on file to show that 2-FL, by itself, achieves the required NK cell

stimulation that is necessary to attain the claimed antiviral effects.

4.3.8 At the oral proceedings, as before in the written proceedings, the respondent did not substantiate its submissions with any evidence other than the data reported in example 1. By contrast, it argued that it was down to the appellants to demonstrate that 2-FL did not provide for the claimed antiviral effects by means of NK cell stimulation.

4.3.9 However, this argument cannot succeed, since the technical effects invoked by the respondent are not plausible over the whole scope of claim 1 of the main request (see point 4.3.7 above).

4.3.10 Summing up the above considerations, the board finds that the technical effects relied upon by the respondent cannot be accepted as being achievable across the whole scope of claim 1 of the main request. As a consequence, these effects cannot be taken into account in the formulation of the objective technical problem posed.

4.3.11 In the absence of any other data demonstrating a particular technical effect linked to the distinguishing feature, the objective technical problem to be solved must be considered to be the selection of a specific fucosyllactose for the treatment and/or prevention of infections caused by RSV.

4.3.12 The proposed solution to this problem is 2-FL.

4.4 Obviousness

4.4.1 What remains to be decided is whether the proposed solution is obvious in view of the state of the art.

4.4.2 It is common ground that "fucosyl-lactose" referred to in D2 (see point 4.2.2 above) is a generic term comprising two different types of fucosyllactoses, 2-FL and 3-FL (see D4, page 980, left-hand column, first full paragraph). The skilled person is also aware of the fact that 2-FL is abundantly present in human breast milk (see paragraph 0014 of the patent in suit; D3, page 3, lines 3 to 4). In the light of this knowledge, the skilled person would consider 2-FL as a solution to the objective technical problem as defined in point 4.3.11 above and thus arrive at the claimed subject-matter in an obvious manner.

4.4.3 The respondent submitted that D2 did not contain any pointer for the skilled person to specifically select 2-FL to achieve the NK-cell-stimulating effects demonstrated in the patent in suit.

4.4.4 However, in view of the fact that the objective technical problem to be solved merely involves providing a specific fucosyllactose for the treatment and/or prevention of infections caused by RSV, this argument must fail. The proposed solution to this problem, i.e. 2-FL, is devoid of inventive merit for the reasons set out above.

4.4.5 In light of the above considerations the board comes to the conclusion that claim 1 of the main request does not meet the requirements of Article 56 EPC.

Auxiliary request 2 - claim 1

5. Article 100(a) EPC in conjunction with Article 56 EPC

5.1 Claim 1 of this request pertains to the use of 2-FL in the manufacture of an enteral composition, said composition not being human milk, for treating and/or preventing viral infections caused by orthomyxoviridae.

5.2 The closest prior art

5.2.1 The board agrees with the parties that D2 remains the closest prior art for the subject-matter of claim 1 of auxiliary request 2.

5.2.2 In the respondent's view, the subject-matter of claim 1 differed from D2 not only in terms of the active agent but also in terms of the infectious diseases to be treated and/or prevented, i.e. it established a link between a specific fucosyllactose (2-FL) and a specific virus causing respiratory tract infections, that is a virus belonging to the orthomyxoviridae family.

5.2.3 The board does not agree. In one of its preferred embodiments, D2 teaches the use of an enteral composition comprising a galactose-containing indigestible oligosaccharide for the treatment and/or prevention of respiratory tract infections caused by orthomyxoviridae (see paragraph 0032). The indigestible oligosaccharide is most preferably a transgalactooligosaccharide (see paragraph 0019 and example 6 reporting on the effectiveness of transgalactooligosaccharides in reducing the occurrence of respiratory tract infections in infants when added to standard infant formulas). Accordingly, the embodiment of D2 coming closest to the claimed

invention is the use of transgalactooligosaccharides for the treatment and/or prevention of respiratory tract infections caused by a virus belonging to the orthomyxoviridae family. The subject-matter of claim 1 differs from this disclosure in that the indigestible oligosaccharide is 2-FL.

5.3 Objective technical problem and solution

5.3.1 For the reasons set out with regard to the main request, the board is unable to identify any particular technical effect in connection with the distinguishing feature. Accordingly, the objective technical problem to be solved by the claimed invention is to be formulated as the provision of a further galactose-containing indigestible oligosaccharide for the treatment and/or prevention of infections caused by orthomyxoviridae.

5.3.2 The proposed solution to this problem is 2-FL.

5.4 Obviousness

D2 describes fucosyllactose as one of the preferred indigestible galactooligosaccharides for use in the treatment and/or prevention of respiratory tract infections (see paragraph 0019). Furthermore, the respondent did not refer to any passage of D2 that would have discouraged the skilled person from considering fucosyllactose as a promising solution to the above-mentioned problem. As for the selection of the specific fucosyllactose 2-FL, this is considered to be an arbitrary choice made within the ambit of the skilled person's common general knowledge (see point 4.4.2 above) and therefore cannot provide any inventive merit either.

5.4.1 In the respondent's view, D2 did not contain any pointer that would have prompted the skilled person to specifically select fucosyllactose from among the oligosaccharides disclosed in paragraph 0019 of that document.

5.4.2 However, this argument must fail since no specific motivation is required to make an arbitrary choice of a particular embodiment from a host of embodiments in order to provide a mere alternative, i.e a further galactose-containing indigestible oligosaccharide for the treatment and/or prevention of infections caused by orthomyxoviridae.

5.4.3 For these reasons, the board concludes that the subject-matter of claim 1 of auxiliary request 2 does not fulfil the requirements of Article 56 EPC.

Auxiliary request 5 - claim 1

6. Article 100(a) EPC in conjunction with Article 56 EPC

6.1 Claim 1 of this request differs from claim 1 of auxiliary request 2 in that the enteral composition comprises 0.07 to 1 wt% fucosyllactose based on dry weight of the composition.

6.2 Since this additional feature is already disclosed in paragraph 0019 and in claim 6 of the closest prior art, D2, it does not alter the assessment of inventive step made above for the subject-matter of claim 1 of auxiliary request 2.

6.3 As a consequence, claim 1 of auxiliary request 5 does not comply with the requirements of Article 56 EPC either.

Further objections raised by the appellants

7. Since none of the requests meets the requirements of Article 56 EPC, it is not necessary for the board to deal with the further objections raised by the appellants against these requests.

Order

For these reasons it is decided that:

1. The patent is revoked.

The Registrar: The Chairwoman:

M. Schalow M. Pregetter

Decision electronically authenticated