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Case Number: T 2047/12 - 3.3.01

Application Number: 05777309.5

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Language of the proceedings: EN

Title of invention:
IMMUNE STIMULATORY INFANT NUTRITION

Patent Proprietor:
N.V. Nutricia

Opponents:
Friesland Foods B.V.
NESTEC S.A.

Headword:
Infant nutrition/NV NUTRICIA

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Keyword:
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Catchword:

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Case Number: T 2047/12 - 3.3.01

D E C I S I O N
of Technical Board of Appeal 3.3.01
of 8 February 2018

Appellant I: (Patent Proprietor)	N.V. Nutricia Eerste Stationsstraat 186 2712 HM Zoetermeer (NL)
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Party as of right: (Opponent 1)	Friesland Foods B.V. Blankestein 142 7943 PE Meppel (NL)
Representative:	van Deursen, Petrus Hubertus Friesland Campina Innovation Centre Bronland 20 NL-6708 WH Wageningen (NL)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 5 July 2012 concerning maintenance of the European patent No. 1781307 in amended form.**

Composition of the Board:

Chairwoman	G. Seufert
Members:	T. Sommerfeld
	L. Bühler

Summary of Facts and Submissions

I. European patent No. 1781307, based on European patent application No. 05777309.5, which was filed as an international patent application published as WO 2006/018314, was granted with 11 claims.

II. Two oppositions were filed against the granted patent, both opponents requesting revocation of the patent in its entirety on the grounds of lack of novelty and inventive step (Articles 54(2) and 56 EPC in combination with Article 100(a) EPC) and lack of sufficiency of disclosure (Article 100(b) EPC).

III. By an interlocutory decision announced at oral proceedings, the opposition division decided that the patent could be maintained in amended form on the basis of auxiliary request 6 filed during those oral proceedings (Articles 101(3)(a) and 106(2) EPC).

The opposition division considered that the claims according to the main request (claims as granted) and according to auxiliary requests 1, 1A, 2, 2A, 3, 3A, 4, 4A, 5 and 5A did not meet the requirements of Article 56 EPC. The requirements of Articles 83, and 54 EPC were considered to be fulfilled for all requests, and all auxiliary requests were also found to meet Articles 123(2)(3) and 84 EPC, as well as Rule 80 EPC.

IV. The patent proprietor (appellant I) lodged an appeal against that decision. With its statement of grounds of appeal, appellant I requested that the patent be maintained as granted (main request) or alternatively according to one of the auxiliary requests 1 to 8 and 1A to 8A, all filed with the statement of grounds of appeal.

V. Opponent 2 (appellant II) also lodged an appeal against the decision of the opposition division. With its statement of grounds of appeal, appellant II requested that the decision be set aside and the patent revoked in its entirety, and submitted documents E1 to E5.

VI. Both appellants submitted replies to each other's statement of grounds of appeal. Opponent 1 (party as of right) also filed a response to appellant I's statement of grounds of appeal, requesting that its appeal be dismissed.

VII. Oral proceedings before the board took place on 8 February 2018, as scheduled. During the oral proceedings, appellant I withdrew auxiliary requests 1 and 1A. At the end of oral proceedings, the chairwoman announced the board's decision.

VIII. The main request consists of the claims as granted. Independent claims 1 and 9 read as follows:

"1. Nutritional or pharmaceutical composition formulated as an infant formula and containing a fat component, a protein component and a carbohydrate component and comprising whey and casein, characterized in that,
the weight ratio of casein to whey is 1:1 to 1:2.4 and that the compositions contains [sic]:
a) at least 3 grams arginine per 100 grams protein;
b) at least 10 wt.% linoleic acid based on total fatty acids;
c) at least 1 wt.% alpha linolenic acid based on total fatty acids;
d) at least one long chain-polyunsaturated fatty acid in an amount exceeding 0.1 wt.% based on total fatty

acids, said long chain polyunsaturated fatty acid being selected from the group consisting of docosahexaenoic acid, arachidonic acid and eicosapentaenoic acid;
e) 5 to 25 wt.% of at least one polyunsaturated fatty acid based on total fatty acids;
f) 2 to 12 grams indigestible oligosaccharides having a degree of polymerisation of 2 to 100 per 100 gram dry weight of the composition; and
g) acidic oligosaccharides with a degree of polymerisation of 2 to 100."

"9. Use of a composition as defined in anyone [sic] of claims 1 - 8 for the manufacture of a formula food or a medicament to be administered to a human infant for the treatment and/or prevention of an inflammatory disease, of diarrhea, of eczema and/or of atopic dermatitis."

Claim 1 of auxiliary request 2 differs from claim 1 as granted in that it further defines item g) as follows:

"1. ...
g) **between 1 and 10 grams** acidic oligosaccharides with a degree of polymerisation of 2 to 100 **per 100 gram dry weight of the composition**."

Claim 1 of auxiliary request 3 comprises the same amendment as claim 1 of auxiliary request 2 and further defines item f) as follows:

"1. ...
f) 2 to 12 grams indigestible oligosaccharides having a degree of polymerisation of 2 to 100, **comprising 0.5 to 10 gram galactooligosaccharide with a degree of polymerisation between 2 and 10**, per 100 gram dry weight of the composition; and ..."

Claim 1 of auxiliary request 4 differs from claim 1 of auxiliary request 2 in that it further defines item f) as follows:

"1. ...
f) 2 to 12 grams indigestible oligosaccharides having a degree of polymerisation of 2 to 100 per 100 gram dry weight of the composition, **comprising at least one oligosaccharide selected from the group consisting of inulins and fructooligosaccharides and at least one oligosaccharide selected from the group consisting of galactooligosaccharides and pectin hydrolysate;**
and ..."

Claim 1 of auxiliary request 5 differs from claim 1 of auxiliary request 2 in that it further defines item g) as follows:

"1. ...
g) between 1 and 10 grams acidic oligosaccharides with a degree of polymerisation of 2 to 100 per 100 gram dry weight of the composition, **wherein the acidic oligosaccharides are pectin hydrolysate.**"

Claim 1 of auxiliary request 6 differs from claim 1 of auxiliary request 2 in that it further defines the oligosaccharides of the composition as follows:

"1. ...
g) between 1 and 10 grams acidic oligosaccharides with a degree of polymerisation of 2 to 100 per 100 gram dry weight of the composition,
the composition comprising transgalactooligosaccharide, pectin hydrolysate and at least one selected from the group consisting of fructooligosaccharides and inulin."

Auxiliary request 7 corresponds to the claims as maintained by the opposition division. Claim 1, which differs from claim 9 as granted in that it deletes the alternative "diarrhea" and defines the composition as identical to that of claim 1 of auxiliary request 2, reads as follows:

"9. Use of a **nutritional or pharmaceutical** composition ~~as defined in anyone of claims 1 - 8~~ **formulated as an infant formula** for the manufacture of a formula food or a medicament to be administered to a human infant for the treatment and/or prevention of an inflammatory disease, ~~of diarrhea,~~ of eczema and/or of atopic dermatitis **said composition [*defined as in claim 1 of auxiliary request 2*].**"

Claim 1 of auxiliary request 8 differs from claim 1 of auxiliary request 7 in that the composition is defined as in claim 1 of auxiliary request 6.

For each auxiliary request there is also a version A which differs from that request in that the composition is further defined by the following features from granted claim 5: "..., **wherein the protein component accounts for 5 to 15 en%; the fat component for 30 to 60 en%; and the carbohydrate component for 25 to 75 en %,... ".**

IX. The following documents are cited in this decision:

D10 Commission Directive of 14 May 1991 on infant formulae and follow-on formulae (91/321/EEC), consolidated text, CONSLEG: 1991L0321, 1 May 2004

D11 Alles MS et al. 2004, Current Paediatrics 14: 51-63

D18 US 5,374,657

D22 Sukoyaka Snow Brand Neo Milk
D24 CA 2340103
D30 US 2003/0060445
E1 Kirjavainen PV et al. 2002, Gut, 51: 51-55
E2 Schiffrin EJ and Blum S 2002, EJCN 56(3):S60-S64
E3 Kalliomäki M and Isolauri E 2003, Curr. Opin. Allergy Clin. Immunol. 3(1): 15-20
E4 Laiho K et al. 2002, Ann. Allergy Asthma Immunol. 89(Suppl.): 75-82
E5 Kirjavainen PV et al. 2003, J. Pediatric Gastroenterology & Nutrition 36: 223-227

X. Appellant I's submissions, in so far as they are relevant to the present decision, may be summarised as follows:

As regards the main request, the difference to D30 was the selection of the fat component ingredients (items b) to e)), and in fact the patent did not demonstrate an effect related to these ingredients. Thus, the technical problem to be solved was to provide an alternative composition. D30 did not provide any incentive to modify specific components in order to arrive at an effect on the immune response, as it was only concerned with prebiotic effects. Combination with D22 would also not lead to the invention, because the ratio of whey to casein was not known in D22 and the amount of indigestible oligosaccharides was below that required by the claim. There was no incentive to modify D22's formula or any other formula available on the market, hence the solution, i.e. the claimed composition with its specific components, was a non-obvious alternative. Although features b) to e) were disclosed in the prior art, there would be no motivation to combine them with the teachings of D30 in order to arrive at the claimed composition.

As regards auxiliary request 2, the amount of acidic oligosaccharides defined in feature g) was above the amount of sialyllactose tested in D30 (table in paragraph [0020]). While D30 mentioned very broad ranges in paragraph [0016], its teaching did not point to selecting different amounts from those of the composition as tested. The effect associated with the difference was that there was immune stimulation and the technical problem was to provide an improved composition, namely one with an improved, unexpected effect on immune stimulation. D30 presented ambiguous data from which no synergy for combining neutral and acidic oligosaccharide for growth of B. lactis could be deduced (Figure 2); as for the synergistic effect on B. infantis, as shown in Figure 1, this was at best specific for this strain. A specific link between prebiotic and probiotic effect was missing. D11 and E1 to E5 showed an effect on immune parameters for specific live bacteria, but did not suggest that the same effect could be reached by promoting growth of said bacteria by administering prebiotics. D11 taught that there was strain specificity, and it was not clear whether the B. lactis in D30 was indeed the same strain as BB-12 in D11. The patent demonstrated synergy for the combination of indigestible oligosaccharides and acidic oligosaccharides (Example 3) and such an effect was not to be expected from the prior art. The given amount was responsible for the specific, unforeseeable, immune effect (Table 2 of Example 3); synergy was shown in Table 3. The examples supported the claimed subject-matter, even if the composition was not identical to that claimed.

As regards auxiliary requests 3 and 4, the amendment brought the claim more into line with the experiments

of the patent by defining the ingredients that conferred the effect. The presence of galactooligo-saccharides (GOS) was not disclosed in D30, nor was there any suggestion in D30 that oligofructose (FOS) could be replaced by galactooligosaccharides, let alone in order to achieve the effect. The same arguments also applied to auxiliary request 5, and in addition there was no suggestion in D30 that pectin hydrolysate could be used. The same likewise went for auxiliary request 6, which required the presence of GOS and pectin, for which the patent showed an effect (paragraph [0067]).

As to auxiliary request 7, D11 taught the use of probiotic bacteria to provide an effect on immune function and only disclosed bifidogenic effects of certain oligosaccharides such as GOS or FOS, but did not suggest focusing on prebiotic oligosaccharides or teach combining neutral and acidic oligosaccharides. It could not be expected that leaving out the probiotic bacteria and adding only prebiotic oligosaccharides would provide an effect on the immune response. Rather the skilled person would look for other probiotic strains. The technical problem was to provide an alternative way to achieve the improvement of the immune function, and the solution was nowhere to be found in the documents on file. In the absence of the bifidobacteria (probiotics), it could not be expected that prebiotics would have an immune modulatory effect by themselves, not even from D30, which showed prebiotic effect for B. infantis but ambiguous data for B. lactis. The same arguments applied to auxiliary request 8, wherein the composition was defined as closely as possible to the examples, which showed that the combination neutral/acidic oligosaccharides provided the immune effect.

As regards the versions A of the auxiliary requests, the same arguments applied to them as to the respective auxiliary requests.

XI. Appellant II's arguments, in so far as they are relevant for the present decision, may be summarised as follows:

D30 differed from the claimed subject-matter of the main request in that it did not specifically detail the fatty acid composition, namely features b) to e) of claim 1. There was however no technical effect associated with these features, which were recommended in the prior art as components for an infant formula: e.g. D10 and D18; D22 also disclosed all of components b) to e). Moreover, D30's paragraph [0020] stated that fatty acids should also be present. The technical problem was to provide an alternative composition, and it would be obvious to design a composition according to claim 1. There was no need for an incentive to include the components according to features b) to e) if the problem was to provide an alternative composition.

As to auxiliary request 2, the further difference to D30 was feature g). D30 showed a prebiotic synergistic effect, in particular in relation to B. lactis, which was the strain disclosed in D11 as also having an immune effect (Bifidobacterium animalis BB-12 on page 58, right column, second paragraph, of D11; E1, abstract; E2 to E5). D30 taught that the combination of oligofructose and sialyllactose was suitable to solve the problem, and the claimed higher amount of acidic oligosaccharide (which was anyway envisaged in D30 at paragraph [0016]) was just an obvious alternative. As to the immune effect in the patent, this had only been

shown for the specific mixture of 1% each, so it was not known what would happen when different amounts and proportions were used, e.g. those of D30. Whatever interpretation was given to D30's figures, D30's conclusions were clear (paragraphs [0024], [0031] and [0032]): supplementation with oligosaccharides led to growth of gut bacteria which had the immune effect.

As to auxiliary request 3, the added feature was very well known in the prior art and so could not confer inventive step: D11, page 58, left column, disclosed the same ratio of GOS to FOS (90:10) as used in the patent (paragraph [0067]). Moreover feature f) was far away from the patent's examples. The same arguments applied to auxiliary request 4, given that even less GOS was required.

As to auxiliary request 5, the further difference to D30 was that the acidic oligosaccharide was pectin hydrolysate. This feature, which had no additional effect, was well known from D24 (Examples 3, page 15). Since sialyllactose was expensive and difficult to provide, the skilled person would look for alternatives. Similarly, there was no additional effect for the further features of auxiliary request 6. D24 also disclosed pectin and transgalactooligosaccharide or fructooligosaccharide (Examples 7 and 12), while D30 referred to fructooligosaccharide. In fact, the claims were much broader than the examples, since the ratio of GOS to FOS used in the examples was not in the claims.

As regards auxiliary request 7, D11 reviewed infant formulas existing in 2004 and listed the components of a typical formulation on page 53. Page 58 taught that probiotic bacteria played a role in immune modulation and could be used for therapy. The distinguishing

features were parameters f) and g), and the effect, if at all considered proven in the patent, was anyway already disclosed in D11. D30 disclosed that combination of two oligosaccharides (FOS and sialyl-lactose) promoted growth of B. lactis (which was identical to BB-12 of D11: E1), while D11 showed that BB-12 had effects on the immune response. Since it was more difficult to supplement with probiotic bacteria than with prebiotic oligosaccharides, the claimed alternative solution to the formulation of D11 would be obvious.

XII. The arguments of the party as of right (opponent 1), in so far as they are relevant for the present decision, may be summarised as follows:

As to the main request, the amounts given in the claim were not relevant and the claimed subject-matter would be obvious over D30 with D10. There was no "could-would" situation when finding alternatives.

As to auxiliary request 2, there was in fact no further feature distinguishing it from D30, as the same amount of acidic oligosaccharide was also disclosed in D30. Claim 1 was not confined to an immune-modulating effect, since it was only a composition claim, not restricted to any particular use. D30 was about compositions for growth promotion of beneficial microorganisms (paragraph [0002]). The patent's Example 3 did not use a composition according to the invention: the diet did not even contain whey, and the oligo-saccharides were not as specified in the claim. An alleged improvement to the closest prior art required comparison to the closest prior art, but none was on file and the examples of the patent did not even relate to infant formulas. The problem was an alternative and

the solution was obvious over the combination of D30 and D10. The same was true for auxiliary request 3. The combination of GOS and FOS in a ratio of 9:1 was part of the common general knowledge, e.g. D11, page 57, right column, middle of last paragraph, so it would be an obvious alternative to D30's use of FOS alone. Moreover, feature f) did not at all reflect the examples of the patent but was far broader. The combination was thus only a juxtaposition of features which were all known and obvious (D10, D11). The same also applied to auxiliary request 4, which had in fact the same scope as auxiliary request 3: FOS was in D30, and there was no range for GOS. The same was true for auxiliary requests 5 and 6, D24 disclosing the claimed oligosaccharides, also in infant formulas: page 1, line 8; claim 12.

As to auxiliary requests 7 and 8, there was no evidence that the effect attained by the probiotics in D11 was also achieved by prebiotics in the patent. There was no comparison to the prior art, so the problem was to provide an alternative infant food formula.

XIII. The appellant I (patent proprietor) requested that the decision under appeal be set aside and that the oppositions be rejected (main request), or, alternatively, that the patent be maintained on the basis of the set of claims in one of auxiliary requests 2 to 6 and 2A to 6A, or, alternatively, that the appellant II's appeal be dismissed (auxiliary request 7), or, alternatively that the patent be maintained on the basis of one of auxiliary requests 7A, 8, and 8A.

The appellant II (opponent 2) requested that the patent proprietor's appeal be dismissed, that the decision

under appeal be set aside and that the European patent No. 1781307 be revoked.

The party as of right (opponent 1) requested that the patent proprietor's appeal be dismissed.

Reasons for the Decision

1. Main request (claims as granted) - inventive step

1.1 The patent is aimed at providing infant formulas which simulate the "functions of human milk" (paragraph [0002]). It notes that while in "current infant formulas, the casein to whey ratio resembles that of human milk as closely as possible (...), there are still several downsides attached to the use of bovine, whey dominant protein sources. These whey dominant formulas do not optimally protect against infections. Administration of such formula results in an impaired development of the intestinal flora of the infant compared [to] infants fed with human milk, particularly in the first three to four weeks of life. The flora of infants fed with the whey dominant formula contains more or less the same bacterial genera as the human milk fed infants[;] however, the quantity of beneficial bacteria is reduced in infants receiving the whey dominant formula compared to infants receiving human milk. Moreover, the flora of infants fed with formulas containing whey dominant bovine protein source contain increased amounts [of] pathological bacteria such as clostridia and enterobacteria", hence resulting "in the formation of a 'suboptimal intestinal flora'", which "may result in infection, diarrhea, allergy and inflammation" (paragraphs [0003] and [0004]). It is

thus the aim of the patent "to provide a nutritional or pharmaceutical composition which reduces the risks attached to feeding whey dominant infant formula" (paragraph [0005]).

1.2 Document D30, which also discloses infant formulas (e.g. paragraph [0020]) with nutritional compositions aimed at improving intestinal flora (paragraph [0002]) by increasing "the concentration of beneficial bacteria (Bifidobacteria) in the gut while having no effect on pathogenic bacteria (e.g., Clostridia, Bacteroides, E. coli, etc[.])" (paragraph [0017]), is considered the closest prior art for claim 1 of the main request.

1.3 The difference to the claimed subject-matter is that D30's infant formula composition as shown in the Table of paragraph [0020] indicates neither the presence and amount of arginine (item a) of claim 1) nor the amounts and composition of fatty acids (items b) to e) of claim 1). As regards item a), the opposition division's conclusion that the claimed amount of arginine was implicit in the presence of casein and whey in the ratio as indicated in the table of paragraph [0020] was not disputed by any of the parties. Hence, the board considers that item a) is implicitly disclosed in D30. As to the fatty acid composition of items b) to e), all parties agreed, at the oral proceedings before the board, that no effect associated with these specific features was described in the patent. Hence, the technical problem can be formulated as the provision of an alternative infant formula, and the board is satisfied that the claimed subject-matter plausibly solves this problem.

1.4 It next has to be examined whether the skilled person would arrive at the claimed solution in an obvious manner.

1.5 Although D30 does not provide any specific indications concerning the composition and relative proportions of the fat component of the infant formula disclosed in the table in paragraph [0020], it does teach, just above said table, that "[t]he infant formula may contain one or more lipid sources as will be recognized by those skilled in the art" and "other substances (...) to have a beneficial effect, such as, (...) polyunsaturated fatty acids". The skilled person would thus turn to documents disclosing generally accepted infant formulas to find information on suitable fat or fatty acid components. In particular, he would consider documents such as D10, which is the Commission Directive on infant formulae and follow-on formulae, or D11, a review article entitled "Current trends in the composition of infant milk formula", both published in 2004, just before the priority date of the patent. Both documents disclose a recommended fatty acid composition which, as was not disputed by the parties, falls within the terms of the claim (D10: Annex I, section 3; D11: Table 1 on page 53). Alternatively, the skilled person would follow the specific suggestion given in D30's paragraph [0020] to add lipid sources, including polyunsaturated fatty acids, as known in the art. The skilled person would thus consider combining the nutritional composition of D30 with known infant formulas such as the one disclosed in D22, wherein it is stated that "[n]utritional ingredients important for the development of a baby are added to be closer to breast milk" (page 5, lines 5 to 6). D22's table on page 8 again discloses a fatty acid composition which falls within the terms of the claim, as was undisputed

by the parties. By adopting the indications given either in D10/D11 or in D22 as regards the fat component of the formula, the skilled person would thus arrive at the claimed solution in an obvious way.

1.6 Appellant I essentially argued that there would be no motivation to change the composition of D30 so as to arrive at the composition as claimed, even less so with the aim of obtaining an immune effect. The board however notes that said alleged aim is not relevant for the discussion of inventive step for the now claimed subject-matter, since the technical problem has to be formulated, as conceded by appellant I, as the provision of an alternative infant formula as compared to the formula of document D30: clearly, in the absence of any evidence to the contrary, any effect which is obtained with the compositions according to claim 1 is also obtained with the composition of D30. As to the arguments that, although the fatty acid components as claimed were known in the art, there was nevertheless no motivation for the skilled person to add these particular components to the composition of D30, the board agrees with the opponents' view that the skilled person, when looking for alternatives to the formula disclosed in D30 in order to solve the objective technical problem posed, would have considered modifying the composition of D30 by the addition of conventional components, in particular when their presence is recommended in the prior art.

1.7 Finally, the board also disagrees with appellant I's arguments that the combination of D30 with D22 would not lead to the claimed solution. Although it is true that D22 does not disclose the ratio of casein to whey and teaches an amount of indigestible oligosaccharide that is below the range claimed, these features are

disclosed in D30, as discussed above. The skilled person would only need to turn to D22 (or any other document disclosing infant formulas, such as D10 and D11) to complement D30's information as to what fatty acid components should be used in what amounts in the infant formula. Once this information had been ascertained from the prior art, the skilled person would be able to combine it with the teachings of D30 and thereby arrive at the claimed composition in an obvious manner.

1.8 Claim 1 of the main request thus lacks an inventive step. The main request is not allowable.

2. Auxiliary request 2 - inventive step

2.1 Claim 1 of auxiliary request 2 differs from claim 1 of the main request solely in that it specifies that the amount of acidic oligosaccharide in item g) is between 1 and 10 grams per 100 gram dry weight of the composition (for the exact wording, see section VIII).

2.2 Paragraph [0016] of D30 teaches that "[t]he nutritional composition of the present invention may comprise 0.1 g/L to 10 g/L of oligofructose and 6 mg/L to 10 g/L of sialyllactose". Sialoglycans fall within the group of acidic oligosaccharides to be "used in the invention", as is apparent from the patent's paragraph [0050]. It was also not disputed by any party that the amount range mentioned in D30's paragraph [0016] overlapped with the amount range of the claim. Hence this feature is not a distinguishing feature over D30 and therefore the same considerations as for the main request (see points 1.3 and 1.5 above) apply to this request too.

2.3 Appellant I essentially argued that, since the amount of sialyllactose that was in fact used and tested in D30 (table in paragraph [0020]) was below the amount of acidic oligosaccharide claimed, the skilled person would not be motivated to use a different amount falling within the broader range disclosed in paragraph [0016]. The board does not find these arguments persuasive. Document D30, while indeed disclosing a specific embodiment (table in paragraph [0020]) with only 100 mg/L siallylactose (i.e. below the claimed range), nevertheless teaches, in paragraph [0016], a whole range of 6 mg/L to 10 g/L of sialyllactose as being suitable for the composition of D30. The disclosure of D30 is not limited to the specific embodiment of paragraph [0020] but instead also encompasses all alternatives disclosed as equally suitable in D30 as a whole.

2.4 Accordingly, appellant I's further argument that the technical problem associated with this difference to D30 was to provide an improved composition, namely one with an unexpected effect on immune stimulation, cannot be accepted either. As reasoned above, this alleged technical effect is not associated with a feature distinguishing the patent from the closest prior art D30, and hence was already implicit in the disclosure of D30. Moreover, there is no evidence in the patent or elsewhere on file that any effect on immune stimulation obtained with an amount of acidic oligosaccharide in the range as claimed would not be obtained over the whole range disclosed in D30, let alone with the specific amount used in the composition of paragraph [0020]. Hence, even if the amount of sialyllactose were to be considered a distinguishing feature, the technical problem could still not be formulated as an

improvement over the closest prior art D30, but rather as an alternative only.

2.5 Appellant I further argued that D30's data as presented in Figures 1 and 2 were ambiguous and that D30, contrary to the patent, did not show any effect of the compositions on the immune response, let alone a synergy resulting from the combination of neutral and acidic oligosaccharides in the amounts as claimed. The board notes that all these arguments are irrelevant in the context of present claim 1, which is directed to a composition. In so far as the components are the same, the composition of D30 implicitly has the same effects as the claimed composition. As for the distinguishing components, these are, as reasoned above, only the fatty acid components items b) to e), for which no specific effect has been shown.

2.6 Claim 1 of auxiliary request 2 thus lacks inventive step. Auxiliary request 2 is not allowable.

3. Auxiliary request 2A - inventive step

3.1 Claim 1 of auxiliary request 2A differs from claim 1 of auxiliary request 2 in that the composition is further defined as regards the energetic percentage provided by each of the protein, fat and carbohydrate components (for the exact wording, see section VIII). Appellant I agreed that these features corresponded to standard infant formulas in the art and did not contribute to inventive step.

3.2 Auxiliary request 2A thus also fails to comply with Article 56 EPC for the same reasons as discussed above in relation to auxiliary request 2.

4. Auxiliary requests 3 and 3A - inventive step

4.1 Claim 1 of auxiliary request 3 comprises the same amendment in item g) as claim 1 of auxiliary request 2 and further defines the oligosaccharides of item f) as comprising 0.5 to 10 g galactooligosaccharide per 100 g dry weight (for the exact wording, see section VIII). Claim 1 of auxiliary request 3A additionally comprises the same further amendment as in auxiliary request 2A (see section VIII and point 3.1 above).

4.2 Since document D30 does not disclose the use of galactooligosaccharides, this is a further distinguishing feature (over the fatty acid components of items b) to e) already discussed in relation to the main request). However, no effect associated with the use of this particular neutral oligosaccharide as opposed to other neutral oligosaccharides is disclosed in the patent or elsewhere on file, and in fact the patent lists a number of other equally suitable neutral oligosaccharides, e.g. in paragraph [0037]. Accordingly there is no effect associated with this further distinguishing feature and thus the technical problem can be formulated as the provision of an alternative composition to the compositions of D30.

4.3 The use of galactooligosaccharides as a component in infant formulas was well known in the prior art, as is apparent from D11, page 58, left column, where the use of "transgalactooligosaccharides" (another designation for galactooligosaccharides) in the prior art is reviewed. Hence its addition to infant formulas according to D30 is considered to be an obvious modification for the skilled person faced with the problem of providing an alternative composition formulated as an infant formula.

4.4 Appellant I's arguments that the skilled person would have had no incentive to replace D30's oligofructose (paragraphs [0016] and [0020] of D30) by galacto-oligosaccharides, let alone in order to achieve the desired immune effect shown in the patent's examples, are not found persuasive. The presence of oligofructose is not excluded from the claim, and in fact the examples of the patent use a combination of galacto-oligosaccharides (GOS) and fructooligosaccharides (FOS), as disclosed in paragraph [0067], fructo-oligosaccharides being another designation for oligofructose. Moreover (as mentioned in point 4.2 above), there is no evidence in the patent or elsewhere on file of a different effect in the immune response (or any other effect) which is specific to the use of galactooligosaccharide in contrast to other neutral oligosaccharides including fructooligosaccharides as disclosed in D30.

4.5 The board thus concludes that claim 1 of auxiliary request 3 is not inventive. Auxiliary request 3 is not allowable. The same applies to auxiliary request 3A, as the additional features do not contribute to inventive step (see point 3.1 above).

5. Auxiliary requests 4 and 4A - inventive step

5.1 Claim 1 of auxiliary requests 4 and 4A differs from claim 1 of auxiliary request 2 and 2A, respectively, in that item f) requires the presence of at least one oligosaccharide selected from among inulins and fructooligosaccharides and at least one oligosaccharide selected from among galactooligosaccharides and pectin hydrolysate (for the exact wording, see section VIII).

5.2 The claimed subject-matter encompasses the use of fructooligosaccharides together with galactooligo-saccharides. Accordingly, the further distinguishing feature over the closest prior art D30 is again the presence of galactooligosaccharides, and the same observations and conclusions as for auxiliary request 3 also apply to auxiliary request 4. In fact, document D11 (supra) reviews the use of galactooligosaccharides and fructooligosaccharides in combination, thus exactly the same combination of oligosaccharides which is also part of the present claim.

5.3 Thus, auxiliary request 4 is not allowable for lack of inventive step (Article 56 EPC). The same applies to auxiliary request 4A, as the additional features do not contribute to inventive step (see point 3.1 above).

6. Auxiliary requests 5 and 5A - inventive step

6.1 Claim 1 of auxiliary requests 5 and 5A differs from claim 1 of auxiliary request 2 and 2A, respectively, in that the acidic oligosaccharides in item g) are further defined as being pectin hydrolysate.

6.2 Document D30 does not disclose the use of pectin hydrolysate and hence this is a further distinguishing feature of the claimed subject-matter (on top of the fatty acid composition of items b) to e) already discussed in relation to the main request). There is however no evidence in the patent or elsewhere on file of an effect specifically associated with the use of this particular acidic oligosaccharide. Hence no conclusions can be drawn from the patent as to a specific effect for pectin hydrolysate, which is just one suitable acidic oligosaccharide from among a list of other equally suitable acidic oligosaccharides,

including sialoglycans (which encompass the sialyl-lactose of D30), as disclosed in the patent in e.g. paragraph [0050]. The objective technical problem is thus formulated as the provision of an alternative composition to the composition disclosed in D30.

6.3 Document D24 is directed to carbohydrate mixtures including oligosaccharides such as galactooligo-saccharides, fructo-oligosaccharides, sialyl-oligo-saccharides, galacturono-oligosaccharide (pages 6 and 7; examples) with prebiotic action for use as dietetic and pharmaceuticals compositions to stimulate the human intestinal flora (page 1, lines 5 to 9), including also their use in infant formulas (claim 12). D24 also discloses the use of "galacturon acid oligosaccharides enzymatic from pectin" (Example 3 on page 15) as a possible alternative among a number of other suitable carbohydrates to be used. Although not specifically referring to "pectin hydrolysate", it discloses the use of "acid oligosaccharides prepared from pectin", as disclosed in the patent in paragraph [0050]. Hence, the use of pectin hydrolysate in the claimed composition is considered as an obvious alternative to the acidic oligosaccharide sialyllactose used in D30.

6.4 Claim 1 of auxiliary requests 5 and 5A thus lacks inventive step over document D30 combined with general knowledge (as represented by e.g. D10 or D11) and with document D24. These auxiliary requests are therefore not allowable.

7. Auxiliary requests 6 and 6A - inventive step

7.1 Claim 1 of auxiliary requests 6 and 6A differs from claim 1 of auxiliary requests 2 and 2A, respectively, in that the oligosaccharides of the composition are

further defined as comprising transgalactooligo-saccharide, pectin hydrolysate and at least one oligosaccharide selected from fructooligosaccharides and inulin.

7.2 Document D30 discloses the use of oligofructose (i.e. fructooligosaccharides) but does not disclose the use of transgalactooligosaccharide and pectin hydrolysate. These are thus further distinguishing features of the claimed subject-matter over the closest prior art D30 (on top of the fatty acid composition of items b) to e) already discussed in relation to the main request). It is not, however, apparent from the patent that these specific oligosaccharides, which are listed in the patent as suitable alternatives among other equally suitable oligosaccharides, are associated with any particular effect. The objective technical problem is thus formulated as the provision of an alternative composition to that of document D30.

7.3 As mentioned above, document D24 renders the use of pectin hydrolysate obvious (Example 3); it also discloses the use of (trans)galactooligosaccharides (Examples 5, 6, 11 and 12), and Example 12 actually corresponds to a mixture comprising transgalacto-oligosaccharides, galacturon acid oligosaccharides and inulin. Hence the use of the claimed mixture of oligosaccharides is an obvious alternative to the mixture used in D30.

7.4 Accordingly the same conclusions as for auxiliary requests 5 and 5A apply to auxiliary requests 6 and 6A, namely that the subject-matter of claim 1 is considered to lack inventive step over the combination of document D30 with general knowledge (as represented by e.g. D10

or D11) and with document D24. Auxiliary requests 6 and 6A are thus not allowable.

8. Auxiliary requests 7 and 7A - inventive step

8.1 Claim 1 of auxiliary requests 7 and 7A is based on claim 9 as granted. It is in the form of a second medical use claim, the composition being defined as "a nutritional or pharmaceutical composition formulated as an infant formula" and containing the components defined in claim 1 of auxiliary request 2 and 2A, respectively, while the medical indication is "the treatment and/or prevention of an inflammatory disease, of eczema and/or atopic dermatitis". It should be noted that, although the disease "diarrhea", explicitly mentioned in granted claim 9, is no longer part of present claim 1, it nevertheless falls within the concept of "inflammatory disorders in infants" as apparent from paragraph [0008] of the patent (see also below). Hence the board considers that treatment and/or prevention of diarrhea is still encompassed by the present claim.

8.2 In paragraph [0004] of the patent, it is explained that "[a]s the very young infants have an immature immune system and an immature intestinal tract, development of the suboptimal intestinal flora may result in infection, diarrhea, allergy and inflammation". Paragraph [0008] then states that "[t]he present composition stimulates the maturation of the immune system and the maturation of the intestinal tract" and is "particularly suitable for preventing and/or treating inflammatory disorders in infants, such as infection, diarrhea and allergy". It is further stated in paragraph [0010] that "[t]he oligosaccharides stimulate the formation of a low risk intestinal flora,

particularly reducing the count of (potentially) pathological intestinal bacteria such as clostridia, enterobacteriae and/or enterococci; and stimulating the colonization by bifidobacteria and lactobacilli. The bifidobacteria and lactobacilli stimulate the maturation of the gut e.g. by stimulating the synthesis of fuco-oligosaccharides by intestinal epithelial cells. Optimal stimulation is achieved by inclusion of a mix of different oligosaccharides, particularly a mix of oligosaccharides including both neutral and acidic oligosaccharides. The oligosaccharides also have a 'direct' effect on the immune system through lowering the Th2 response and increasing the Th1 response. It was found that the present composition which includes oligosaccharides can be advantageously used to restore disbalance in the Th1/Th2 responses and for the treatment and prevention of disorders which are associated with Th1/Th2 disbalance, such as autoimmunity and allergy."

8.3 The closest prior art for claims directed to second medical uses is usually a document which is also directed to the treatment of the same medical condition. Document D30 does not disclose treatment and/or prevention of an inflammatory disease, eczema and/or atopic dermatitis, and is hence a priori not the most suitable starting point for discussion of inventive step in the context of claim 1 of auxiliary requests 7 and 7A. Instead, the board considers document D11, which specifically discusses infant formulas and their impact on allergic inflammation, risk of food allergies, and atopic eczema (page 58, right column, second paragraph), to be the closest prior art. It reviews studies showing that supplementation of infant formulas with probiotic bacteria such as Bifidobacterium bifidus has an effect

in the treatment and/or prevention of diarrhea, and in the prevention of nosocomial infections, antibiotic-associated diarrhea and respiratory infection (page 58, left column, last paragraph, to right column, first paragraph). Moreover, it states that "[p]robiotic bacteria are also thought to play a role in the control of allergic inflammation at an early age" and that "specific strains of bacteria modulate the immune responses to dietary antigens, for example by effects on the balance between pro- and anti-inflammatory cytokines", and that it has been demonstrated that supplementing with given Bifidobacterium and Lactobacillus strains "modifies the allergic inflammation in infants with atopic eczema, compared with a placebo" (page 58, right column, second paragraph). The same paragraph concludes that "[p]robiotic bacteria are thus promising components for infant formulas, with interesting applications in the prevention and treatment of infectious diarrhoea and allergy". It thus describes the same effects as disclosed in the patent, namely modulation of immune responses underlying the treatment and prevention of allergic and/or inflammatory diseases.

8.4 As to the infant formulas disclosed in D11 the following is noted: The ratio of casein to whey and the arginine content of the infant formulas reviewed in D11, while not explicitly disclosed therein, are conventional amounts used in the art; in any case, their exact value does not play a role for the therapeutic effect as claimed. As to the components listed under items b) to e), it was undisputed that they were part of the formulas reviewed in D11 (e.g. Table 1 on page 53; see also reasons 1.5 concerning claim 1 of the main request). As to items f) and g), there is no disclosure in D11 of an immune stimulatory

effect for compositions comprising prebiotic oligosaccharides. The difference to the claimed subject-matter is thus that compositions comprising probiotics instead of prebiotics are used to achieve the therapeutic effect.

8.5 There is no evidence in the patent or elsewhere on file of a specific effect associated with the above-mentioned distinguishing features over D11. As discussed above (point 8.3), the infant formulas reviewed in D11 also have effects in the immune response, making them suitable for the claimed medical uses. In the absence of any data comparing the effects of the formulas of the closest prior art D11 with the composition for use according to claim 1 of auxiliary requests 7 and 7A, the technical problem has to be formulated as the provision of an alternative therapy for the same conditions. Since the therapeutic effect is a technical feature of a second medical use claim (G 2/88, OJ 1990, 93, reasons 10.3), it follows that the technical problem, which is the provision of an alternative therapy for the same condition, is solved by the claimed subject-matter.

8.6 While D11 focuses on supplementation of human formulas with probiotic bacteria - rather than with prebiotic oligosaccharides - as a means to achieve the claimed therapeutic effect (see above, point 8.3), it nevertheless also teaches supplementation with prebiotic oligosaccharides, which are known to be "[t]he important growth promoting bifidus factors in human milk" and which "have two important functions in the infant: (1) They are important bifidogenic factors and selectively stimulate the growth of bifidobacteria in the colon of the breastfed infant (the so-called prebiotic function). (2) They are soluble receptor

analogues for pathogens and thereby have a direct inhibitory effect on certain pathogenic micro-organisms" (page 57, left column, last two paragraphs, to right column, second paragraph). D11 further reports on studies that showed that supplementation with oligosaccharides did improve the infant intestinal flora by increasing the number of bifidobacteria in the fecal flora, "making it more similar to the flora of breastfed infants" (page 57, right column, last paragraph, to page 58, left column, first paragraph). Hence, since it was known that bifidobacteria could be used as an infant formula supplement to modulate immune response and thereby treat and/or prevent inflammatory disorders such as diarrhea, infection and atopic eczema, it would also be expected that supplementation with prebiotic oligosaccharides, which were known to promote the growth of bifidobacteria, could also be used for the same therapeutic effect. Thus, the skilled person, seeking to provide an alternative therapy for these disorders, would certainly consider using prebiotic oligosaccharides as an alternative (or in addition) to probiotic bacteria.

8.7 As to the given amounts and specific oligosaccharides (neutral and acidic oligosaccharides) claimed, the board notes that, prompted by D11 to use prebiotic oligosaccharides in order to achieve the desired therapeutic effects, the skilled person would turn to documents disclosing oligosaccharides with said prebiotic effects, in particular in the context of infant formulas. He would thus consider the disclosure of e.g. D30, which, as mentioned above in relation to auxiliary request 2, teaches using a combination of oligofructose (neutral indigestible oligosaccharide) and sialyllactose (acidic oligosaccharide), in amount ranges that overlap with those claimed, for the purpose

of improving the intestinal flora (paragraph [0002]) by increasing "the concentration of beneficial bacteria (Bifidobacteria) in the gut while having no effect on pathogenic bacteria (e.g., Clostridia, Bacteroides, E. coli, etc[.])" (paragraph [0017]). Hence, document D30 teaches that supplementation with a combination of oligosaccharides which is encompassed in the claim also has the bifidogenic effect that is described in D11 for prebiotic oligosaccharides in general. The skilled person would thus arrive at the claimed solution in an obvious way.

8.8 Appellant I's arguments were essentially that D11 did not teach or suggest using prebiotic oligosaccharides rather than (specific) probiotic bacteria to provide an effect on immune function, and that it only discussed bifidogenic effects for specific oligosaccharides, such as the combination of GOS and FOS. Moreover there was no suggestion in the prior art that the same effect as described in D11 for some strains of probiotic bacteria could be obtained with other bacteria strains or with prebiotics alone. The immune modulation shown in Example 3 of the patent would not be expected from the prior art, and D30, while stating that there was a synergistic effect of the used combination, presented ambiguous data that did not support such a statement.

8.9 As discussed above, the board notes that D11 clearly teaches that administration of probiotic bacteria, including bifidobacteria, has a positive therapeutic effect in a number of clinical situations, in particular those which constitute the therapeutic indications of the present claims. Since D11 also teaches (page 57, right column, first paragraph) that oligosaccharides are bifidogenic factors that selectively stimulate the growth of bifidobacteria in

the colon (prebiotic effect), the skilled person would certainly expect that, by promoting the growth of the bifidobacteria, prebiotic oligosaccharides added as a supplement to infant formulas would, at least indirectly through their prebiotic effect, have an effect on the immune response. So, if only for this reason, the skilled person would in fact be prompted by D11 to test prebiotic oligosaccharides as supplement to infant formulas with the aim of obtaining an alternative therapy for the claimed medical conditions. While the specific oligosaccharides claimed were not disclosed in D11, they were shown in D30 also to have bifidogenic effects, as discussed above, including on the same bifidobacteria as were disclosed in D11 as having the desired therapeutic effects: in this context the board is convinced by appellant II's arguments that the Bifidobacterium animalis BB-12 mentioned in D11 on page 58, right column, second paragraph, is the same strain as B. lactis disclosed in D30 (e.g. Example 2), as evidenced by E1 (abstract). As to the allegedly ambiguous data in D30, the board notes that D30 states that an oligosaccharide composition falling within the terms of the claim has bifidogenic effects (paragraphs [0024] and [0027]), independently of a proven synergism of the combined composition. In the absence of substantiated doubts that such an effect is present, this is sufficient to render the claimed subject-matter obvious.

8.10 Claim 1 of auxiliary requests 7 and 7A thus lacks inventive step and, accordingly, auxiliary requests 7 and 7A are not allowable.

9. Auxiliary requests 8 and 8A - inventive step

9.1 Claim 1 of auxiliary requests 8 and 8A differs from claim 1 of auxiliary requests 7 and 7A, respectively, in that the composition to be used is defined as in auxiliary requests 6 and 6A, respectively. In particular the composition is defined as comprising "between 1 and 10 grams acidic oligosaccharides (...) per 100 gram dry weight of the composition, the composition comprising transgalactooligosaccharide, pectin hydrolysate and at least one selected from fructooligosaccharides and inulin" (item g) of claim 1).

9.2 As mentioned above in relation to auxiliary requests 6 and 6A, document D24 renders the use of pectin hydrolysate obvious (Example 3), and it also discloses the use of (trans)galactooligosaccharides (Examples 5, 6, 11 and 12), Example 12 actually disclosing a mixture comprising transgalactooligosaccharides, galacturon acid oligosaccharides and inulin. D24 moreover teaches that the carbohydrate mixtures used "stimulate health-promoting microorganisms present in the natural flora of the large intestine" (abstract, last paragraph; page 3, lines 17 and 18), which is the same effect as in the patent and in the prior-art documents D11 and D30. Hence, for the same reasons as discussed above in relation to auxiliary requests 6 and 7, the use of the claimed mixture of oligosaccharides is an obvious alternative to the oligosaccharide mixture reviewed in D11 (GOS:FOS) or used in D30 (oligofructose and sialyllactose).

9.3 Claim 1 of auxiliary requests 8 and 8A also lacks an inventive step and thus these requests are also not allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairwoman:

M. Schalow G. Seufert

Decision electronically authenticated