BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 30 November 2011

Case Number: T 2279/08 - 3.3.09

Application Number: 97914289.0

Publication Number: 894142

IPC: A23D 9/00

Language of the proceedings: EN

Title of invention:
Microbial oil containing a polyunsaturated fatty acid and method of producing oil from pasteurised and granulated biomass

Patentee:
DSM IP Assets B.V.

Opponent:
Suntory Liquors Limited

Headword:
-

Relevant legal provisions:
EPC Art. 83, 84, 54, 56
EPC R. 80

Keyword:
"Sufficiency of disclosure (yes)"
"Clarity - not objectionable"
"Novelty (yes): No unambiguous disclosure of the meaning of a feature in an example of a prior art document; non-enabling disclosure of the example"
"Inventive step (yes)"
"Amendments occasioned by an opposition ground (yes)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 2279/08 **-** 3.3.09

D E C I S I O N
of the Technical Board of Appeal 3.3.09
of 30 November 2011

Appellant: (Opponent)
Suntory Liquors Limited
Daiba 2-3-3
Minato-ku
Tokyo (JP)

Representative:
Polz, Leo
Hoffmann Eitle
Arabellastrasse 4
D-81925 München (DE)

Respondent: (Patent Proprietor)
DSM IP Assets B.V.
Het Overloon 1
NL-6411 TE Heerlen (NL)

Representative:
Elkenbracht, Johan Christiaan
DSM Intellectual Property
P.O. Box 130
NL-6100 AC Echt (NL)

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 2 October 2008 concerning maintenance of European patent No. 894142 in amended form.

Composition of the Board:

Chairman: W. Sieber
Members: W. Ehrenreich
K. Garnett

Summary of Facts and Submissions

I. Mention of the grant of European patent No. 0 894 142 in respect of European patent application No. 97 914 289.0 filed as international application PCT/EP1997/001448 on 21 March 1997 in the name of GIST-BROCADES B.V. - now DSM IP Assets B.V. - was announced on 31 May 2006 in Bulletin 2006/22.

The patent was granted with 27 claims, independent claims 1 and 12 reading as follows:

"1. A microbial oil, comprising at least one polyunsaturated fatty acid (PUFA), which has a triglyceride content of 93% to 97%."

"12. A process for obtaining an oil comprising at least one polyunsaturated fatty acid (PUFA) from a microbial biomass, the process comprising:

a) providing a biomass with a dry matter content of from 25 to 80%;
b) granulating the biomass into granular particles;
c) drying the granular particles to give dried granules; and
d) extracting or isolating the oil from the dried granules."

Claims 2 to 11 and 13 to 23 were dependent claims. Claims 24 and 25 were directed to the use of the oil of claims 1 to 11 for the preparation of a food or cosmetic composition of a nutritional supplement. Claims 26 and 27 were directed to a food or cosmetic

composition or a nutritional supplement containing the oil of claims 1 to 11.

II. Opposition against the patent was filed by

Santory Limited

on 28 February 2007 on the grounds of Article 100(a) (lack of novelty and inventive step), 100(b) and 100(c) EPC. The opponent requested that the patent be revoked in its entirety.

The opponent ***inter alia*** cited the following documents:

D2 JP-A 64-38007 (English translation)
D3 EP-A 0 155 420
D4 EP-A 0 520 624
D5 WO-A 92/13086
D6 US-A 5 340 594
D7 GB-A 1 411 450
D8 US-A 5 407 957.

With the letter dated 13 May 2008 the proprietor filed the experimental report D20.

III. With its interlocutory decision announced orally on 11 June 2008 and issued in writing on 2 October 2008 the opposition division maintained the patent in amended form on the basis of claims 1 to 25 of the main request filed during the oral proceedings. The claims according to the main request differed from the claims as granted by the deletion of claims 26 and 27.

IV. The following issues were dealt with in the decision:

(a) Article 123(2) EPC

The opponent's objection under Article 100(c) EPC only concerned a passage in paragraph [0047] of the description of the patent specification. The opposition division found that this paragraph had a basis on page 9, lines 28 to 30 of the application as filed and that it therefore complied with Article 123(2) EPC.

(b) Article 83 EPC

As to sufficiency of disclosure the opponent raised two objections, one concerning the broadness of claim 1 as regards the microorganism which had to be able to produce oils with a triglyceride content of from 93% to 97%, the other concerning the incomplete definition of the Rancimat Induction Time (RIT) in claim 11 in respect of the method of measuring it.

(i) With reference to the first objection the opposition division considered that the patent provided a method of producing triglyceride containing oils and that, in the absence of any evidence to the contrary, the test of further microbes for their ability to produce an oil with a triglyceride content of 93% to 97% was routine for a skilled person.

(ii) Concerning the opponent's objection against the RIT in claim 11 it was the opposition division's view that, in the absence of evidence that the sample weight and the air flow would significantly influence the RIT, the lack of definition of these parameters in the patent did not render claim 11 insufficiently disclosed.

(c) Article 54 EPC

The novelty discussion as regards the subject-matter of claim 1 focused on D2, in particular on the meaning of the wording "The purity of this product in terms of total triglycerides was over 96% … " appearing in example 1 of D2 (emphasis by the board). The opposition division agreed with the proprietor that this wording, at the time when D2 was drafted and in the field of microbial oils for use as foodstuff or cosmetics, was generally used to designate all lipids in the non-polar fraction. The technical meaning of this wording was therefore that the oil in example 1 of D2 had a purity of over 96% in terms of non-polar lipid components. Therefore, D2 did not clearly and unambiguously disclose an oil with 93-97% of actual triglycerides in the sense of the patent, ie as triesterified glycerols. The same applied to D3, which was drafted at the same time period as D2.

In the opposition division's view the process of claim 12 was novel over D5, D6 and D7 because none

of the documents disclosed the sequence of the process steps (a) to (d) required in the claim.

(d) Article 56 EPC

As to inventive step of the oil claimed in claim 1, the opposition division was satisfied that the proprietor's experimental report D20 showed an improved oxidation stability in terms of RIT for an oil having the claimed triglyceride content of 93% to 97%. None of the cited documents suggested the increase of the triglyceride content up to this level in order to improve the oxidation stability of a microbial oil.

D7 was considered to represent the closest prior art for the assessment of inventive step of the process claimed in claim 12 because it showed that lipids could be much better extracted from a biomass in granulated form. In the opposition division's view it was however not obvious from other prior art documents that granulation of a biomass with a dry matter content as claimed in step (a) followed by drying the granulated biomass would improve the extraction process and was therefore advantageous for the production of PUFA-containing microbial oils.

V. Notice of appeal was filed by the opponent (hereinafter: appellant) on 2 December 2008. The prescribed fee was paid on the same day. The statement of the grounds of appeal was received on 12 February 2009. The appellant maintained its objections under Articles 100(a) and (b)

EPC put forward in the opposition proceedings and *inter alia* filed the following further documents:

D38 Experimental Results (follow-up experiments demonstrating the alleged lack of technical effect associated with the triglyceride content)
D38A Certificate of Analysis No. 208111982-001
D38B English translation of D38A
D39 Declaration of Kenji Katano
D43 Suzuki et al., Studies on Production of Lipids in Fungi VIII, 1982
D43B English translation of D43.

VI. In response to the appellant's grounds of appeal the proprietor (hereinafter: the respondent) submitted with its letter dated 6 October 2009 seven sets of claims as bases for a main request and six auxiliary requests replacing the requests then on file.

Claim 1 of the main request differed from granted claim 1 in that the PUFA comprised in the microbial oil was further defined to be a C20 or C22 ω-3 or a C20 ω-6 polyunsaturated fatty acid.

With the same letter *inter alia* the following documents were filed:

D44 Experimental Report: Solid fermentation on potato medium
D49 Experimental Report: RIT mixtures of purified ARA oil and purified palm oil
D50 Experimental report
D51 Experimental report.

D44 was a rework of example 1 of D2 and was filed with the aim of showing that the triglyceride content of the oil produced in that example was below 93%.

VII. In response the appellant filed with its letter dated 7 March 2011 ***inter alia*** filed the following documents:

D55 Declaration of Nozomu Kadama
D56 Declaration of Nobushige Doisaki
D56A Declaration of Hideaki Yamaguchi
D57 EP-A 0 166 537
D58 GB-A 882 634.

In a follow-up submission dated 5 August 2011 the appellant disputed that the respondent had performed the correct experiments of D49 in order to establish what the absolute factor responsible for the change of RIT was. In its view, the only conclusion that could be drawn from D49/D50 was that the arachidonic acid (ARA) content contributed to the oxidative stability and not the triglyceride content of the oil. The respondent's own experiments in D55/56/56A showed that a lower than expected ARA content resulting from the protocol in example 1 of D2 did not necessarily result in a lesser amount of triglyceride content. From these experiments it followed that, although the resulting microbial oil was a lipid with an ARA-content of about 55% (instead of 72.9% in example 1 of D2 - remark by the board), the disclosed triglyceride content of 96% was achieved.

VIII. With its letter dated 30 September 2011 further experimental data were provided by the respondent, namely

D44A providing NMR-data concerning the triglyceride contents of the oils produced in D44;
D20B and D51A relating to further information on the oils produced in D20 and D51.

IX. In its letter dated 20 October 2011, the appellant observed that document D44A was late-filed and requested that it not be admitted into the proceedings.

X. In response to the appellant's letter the respondent submitted, with its letter dated 30 October 2011, further documents, *inter alia*

D50A An experimental report by Dr. A. Carvalho de Souza.

XI. In a communication dispatched by fax on 9 November 2011 the board made its observations on essential issues of the case. It was stated that the admission of documents filed by the parties after dispatch of the summons to attend oral proceedings dated 6 April 2011 would be decided in the oral proceedings.

As to the issue of novelty the board stated that it had to be decided first whether or not the skilled person, using his common general knowledge as at or before the filing date of the application, would have unambiguously subsumed mono- and diglycerides under the term "triglycerides" in conjunction with fats/oils.

XII. Oral proceedings took place on 30 November 2011 where the respondent maintained only its main request filed with the letter of 6 October 2009. At the beginning of the proceedings the appellant raised new objections

under Rule 80 and Article 84 EPC. The further issues which were discussed were novelty and inventive step of the microbial oil claimed in claim 1, inventive step of the process for obtaining an oil claimed in claim 10 of the main request, and sufficiency of disclosure.

Claims 1 and 10 of the main request on which the discussion was based read as follows:

"1. A microbial oil, comprising at least one polyunsaturated fatty acid (PUFA), which has a triglyceride content of 93% to 97%, wherein the PUFA is a C20 or C22 ω-3 or a C20 ω-6 polyunsaturated fatty acid."

"10. A process for obtaining an oil comprising at least one polyunsaturated fatty acid (PUFA) from a microbial biomass, the process comprising:

a) providing a biomass with a dry matter content of from 25 to 80%;
b) granulating the biomass into granular particles;
c) drying the granular particles to give dried granules; and
d) extracting or isolating the oil from the dried granules."

XIII. The arguments of the appellant in its written and oral submissions may be summarized as follows:

(a) *Rule 80 EPC*

The claims of the main request were submitted by the respondent with its letter dated 6 October 2009. According to page 2, point 2 of this letter

this request was submitted *"to simplify issues at appeal"* and was *"not an admission that either D3, D4 or D43 is novelty-destroying"*. It was therefore not apparent by which opposition ground the amendments in this request were occasioned.

(b) *Clarity - Article 84 EPC*

As regards the claimed triglyceride content of 93% to 97%, no distinction was made in claim 1 between weight-% and mole-%. On page 13, paragraph 2 of its submission dated 30 October 2011 the respondent argued that the appellant did not use the technique disclosed in the patent (paragraph [0205]), ie the ^{1}H-NMR method, for determining the triglyceride content. Instead, GC and the Iatroscan method were used. It was well known that GC, Iatroscan and TLC provided data in weight-% whereas the data of the NMR-method provided the molar ratio of molecules, which, however, were difficult to interpret. Because the triglyceride values varied depending on the method for measurement, claim 1 was unclear.

(c) *Novelty - claim 1*

The discussion of novelty exclusively related to the question whether the oil claimed in claim 1 was anticipated by the disclosure in D2. In particular, two key points were of relevance in this context, namely:

(i) the meaning of the term "triglycerides"; and
(ii) the enabling disclosure of example 1.

Point (i)

As regards the meaning of the term "triglycerides" at the time when D2 was drafted (ie in 1988), reference should be made to the whole disclosure of D2 itself, in particular:

- page 3, second paragraph item (1) where mono-, di- and triglycerides were clearly distinguished from each other;
- pages 4/5, bridging paragraph where, after silica gel chromatography, a triglyceride fraction (1) was obtained, which fraction was also obtained using hexane as extraction medium;
- example 1, giving the percentage of total triglycerides.

In conclusion, the disclosure of triglycerides in D2 had therefore to be understood in the sense that a mixtures of triglycerides, ie triesterified glycerols which had a variability in the fatty acid pattern, was meant. No information was given in D2 which would cause the skilled person to include the mono- and diglycerides within the term "triglycerides".

These conclusions were corroborated by the disclosures in a number of other prior art documents, ***inter alia***:

D3, page 9, second paragraph and page 11, from paragraph 3 onwards;

D4, page 5, line 35 et seq. and page 6, line 11 et seq.;
D5, page3, first paragraph; page 11, from line 16 onwards; page 13, lines 6/7; page 15, line 20;
D21a ("Clinical Chemistry, Principles and Technics"), page 864, paragraph 2;
D21c ("Lipid Nomenclature"), page 129, item 6 in the left column;
D16 ("Simplified Measurement of Monoglycerides, Diglycerides, Triglycerides, and Free Fatty Acids in Biological Samples"), page 145, left column, last paragraph;
D29 ("Changes in Lipid Composition of Methanol-grown Candida guilliermondii"), Table II, where a clear distinction was made between mono-, di- and triglycerides.

Point (ii)

Example 1 of D2 disclosed process steps which indeed enabled a skilled person to reproduce this example. Any gaps of information in the example could be filled by a skilled person with his common general knowledge in the field of culturing microorganisms.

Concerning the reproduction of example 1 of D2 as performed in the experimental report D55, it had to be pointed out that D2 was a Japanese document and that the term "Irish potato" denoted an ordinary potato in Japan. According to item 3 of D55, 600 g of Irish potatoes were boiled in 400 ml of water for 20 minutes as required in example 1 of D2. The deviation from the protocol in D2,

namely that the filtrated potatoes and the solution of 60 g glucose and 735 mg $CaCl_2 \cdot 2H_2O$ in 150 ml water were sterilized separately before they were combined, had no influence on the composition of the resulting oil. Also, the process of freeze-drying selected in item 5 of the experimental report D55 vis-à-vis the disclosure in example 1 that the cells, after culturing, were simply "dried" was a selection of a common drying process, as seen from D5, page 11, line 20 et seq. The dried crushed cells were then extracted with hexane and the crude oil was analysed in order to determine the fatty acid profile (depicted in Table 1) via capillary analysis, and the triglyceride content was determined in weight-% by means of TLC/FID and GC according to D56. Because the precision of the Iatroscan/GC method was very high and had a very low standard deviation, there was no reason to use the NMR-method according to the patent, which was not a standard method for determining triglycerides. The results in D56 were confirmed in D56A using a different GC method with an Ultra Alloy column.

The above results showed that a rework of example 1 of D2 led to a microbial ARA-containing oil having a triglyceride content within the claimed range. In this regard it was not decisive that the ARA content of the oil of D55 was lower than that of example 1 of D2 because the ARA-content was not a feature of the oil claimed in claim 1.

(d) *Inventive step - claim 1*

D5 was representative of the closest prior art, disclosing a microbial oil providing ARA without providing additional EPA (page 2, line 26 et seq). The oil, which was obtained from mortierella alpina after cultivation, harvesting, vacuum drying or lyophilization of a biomass by hexane extraction (page 11, line 5 et seq), could be used directly, for instance in an infant formulation (page 15, line 30 to 32) or in cosmetic formulations (page 16, lines 21 to 24). Although the claimed triglyceride range of 93 to 97% was not expressly mentioned in D5, it was pointed out on page 15, lines 22 to 24 that the ARA-containing oil is predominantly triglyceride.

The claimed oil differed therefore from the oil of D5 only in that it contained from 93 to 97% of triglycerides. The experiments described in D38, D38A, D38B, D39 and D39A demonstrated that the link alleged by the respondent (in the light of its experiments D49, D50, D50A and D51) between a high triglyceride content in the microbial oil and its high oxidation stability (expressed as Rancimat Induction Time, RIT), did not exist. The problem to be solved arising out of this difference could therefore merely be seen in the provision of an alternative oil. A skilled person wishing to solve this problem would turn to D2 because the oil of D2:

- had no EPA but a high ARA-content instead;

- was obtainable as a triglyceride fraction by hexane extraction from mortierella alpina;
- had a high purity in terms of triglycerides of greater than 96%; and
- was useful in cosmetic formulations, such as the oil of the patent.

The oil claimed in claim 1 was therefore obvious from a combination of D5 with D2.

(e) *Inventive step - claim 10*

The sequence of process steps (a) to (d) included a pre-treatment of the biomass to obtain a dry matter content of from 25 to 80% in step (a), granulating the biomass and drying the granules in steps (b) and (c). According to example 1 of the patent several drying experiments for the wet biomass cake were performed and, after extraction with hexane, crude oils were obtained. Example 20 showed that these oils obtained in example 1, ie by omitting the granulation steps (b) and (c), had a triglyceride content of 96.6%, which was in the range claimed in claim 1. These process measures in combination were therefore not linked to a surprising technical effect.

D7 was representative of the closest prior art. This document pertained to the improvement of a purification process for the removal of lipids from microorganism products by forming the microorganism product into granules prior to extraction with solvents (page 1, lines 70-78). Hexane was a suitable extraction medium (page 2,

line 55). A preferred microorganism was *inter alia* Candida tropicalis (page 2, line 130 and example 1) which, according to Table I of D15, was a PUFA-producing microorganism. According to page 2, lines 100 to 126, the granules could be obtained by alternative methods from a biomass with a dry matter of 60%. According to page 2, lines 9 et seq the granules could be subjected to a heat treatment before extraction (ie before applying step d) as claimed). The temperature for this treatment was 100 to 140°C, at which removal of residual water, ie a drying process, inevitably took place.

A skilled person being aware of D7 would therefore apply the process steps in the sequence as claimed in claim 10, thereby arriving at the claimed process.

(f) *Sufficiency of disclosure*

The independent claims were broad and not limited to any microorganism. The only exemplified oil with a triglyceride content within the claimed range of from 93 to 97% was derived from mortierella alpina. Oils obtained in example 17 from C. cohnii had a triglyceride content which was far below 93%. It was therefore not credible that the claimed oil could be obtained with any microorganism other than the mortierella strain.

XIV. The counterarguments of the respondent were as follows:

(a) *Rule 80 EPC*

The appellant's objections in this respect were unfounded. The amendments to the claims were indeed occasioned by novelty attacks in the written proceedings, based on several documents.

(b) *Article 84 EPC*

Claim 1 of the main request was a combination of claims 1 and 3 as granted and was therefore not objectionable under Article 84 EPC.

(c) *Novelty - claim 1*

Point (i) [the term "triglyceride"]

In D2 the word "triglyceride" was used in several contexts. It should, however, be noted that it was decisive for the assessment of novelty over D2 how the word "triglycerides" had to be interpreted in context with the disclosure in example 1. There, use not simply of the word "triglyceride"; rather, it was indicated that the purity of the lipid product (1A) "in terms of total triglycerides" (emphasis added) was over 96%. This term in example 1 of D2 obviously did not refer to the actual triglyceride content in the oil as distinct from mono- and diglycerides. There was no reason in D2 to make any distinction between mono-, di- and triglycerides in the oil of example 1, because, as set out in the paragraph below Table 1, the

glyceride fraction was trans-esterified before use in a cosmetic formulation. Furthermore, in the paragraph bridging pages 4 and 5 it was stated that the chloroform/methanol extract was subjected to silica gel chromatography to obtain a triglyceride fraction (1) and a polar lipid fraction (4). Here the term "triglyceride fraction" was used in contrast to the term "polar lipid fraction". This comparison clearly implied that the triglyceride fraction subsumed the total non-polar (neutral lipid) fraction, also including the mono- and diglycerides. The view that the term "triglycerides" subsumed the total neutral lipid fraction was corroborated by several other documents of the prior art, ***inter alia***:

D22 ("Fats and Oils Technomic Publication" 1998), page 4 item 3: "fats and oils as triglycerides";
D5, end of page 17: "the first fraction contained a mixture of phospholipides (ie polar lipids) and triglycerides.";
D3, page 1, line 18: "neutral lipids, i.e. oils and fats ...", and page 9, line 8: "fats or oils, i.e. triglycerides".

It should further be noted that no technique was described in D2 as to how to determine the actual triglyceride content distinct from mono- and diglycerides in the oil of example 1 of D2. A more plausible explanation of the expression "The purity in terms of total triglycerides was over 96%" was therefore that a back-calculation of the amount of fatty acid esters to triglycerides was made, whereby the purity was expressed in terms of

triglycerides. This calculation was obviously based on the quantity of fatty acids determined in example 1 of D2 under the assumption that all the acids exist in the form of triglycerides. This, however, was an unrealistic view because it was known that fatty acids in a neutral oil may also be present as mono- and diglycerides (albeit in relatively small amounts). Hence, such a back-calculation was no proof that the oil of example 1 contained 96% triglycerides in the sense of the invention.

Point (ii) [enabling disclosure]

Example 1 of D2 could not be properly reproduced. In particular, it was not possible to obtain an oil with a triglyceride content of over 93% and an ARA content of 72.9% as set out the example. This became apparent from a comparison of example 1 of D2 and example 1 of D45 (EP-A 0 223 960), the latter stemming from Lion Corporation, ie the applicant of D2, from which the following conclusions could be drawn:

- the conditions described in D2 exactly corresponded to the conditions in the experiment of D45, ie in both cases mortierella alpina IFO 8568 was fermented in a medium prepared by boiling 600 g of potatoes in 400 ml of water for 20 min, passing the product through a No. 32 mesh filter, combining the mixture with 60 g of glucose, and then adding 735 mg $CaCl_2 \cdot 2H_2O$; after sterilization, IFO 8568 was inoculated and cultured in the medium at 25°C for 20 days;

- after drying the cells the protocols for recovery of the lipid deviated from each other, in that in D45 the dried cells were crushed and extracted with chloroform/methanol and the lipids obtained were converted to methyl esters, whereas in D2 hexane was used as extraction medium followed by decolorization/deodorization of the lipid;
- equal yields for the oil in D45 and D2 were unrealistic because chloroform/methanol used in D45 as extraction medium not only extracted the non-polar lipids but also the polar lipids. The hexane extraction of D2, predominantly extracting the non-polar lipids, should therefore lead to a lower yield;
- also unrealistic was the much higher ARA content in D2 (72.9%) than the ARA content in D45 (49.2%) which could not be explained by the use of different solvents as extraction medium.

From the above it followed that example 1 of D2 was a false-prophecy example which was impossible to rework.

Furthermore, the appellant had failed in its attempt to rework example 1 of D2 by its experiment D55/D56 because it had not followed the given protocol 1, deviating from it in several aspects; in particular

- the appellant had not used of newly harvested potatoes, as recommended by Prof. Totani; the use of non-newly harvested potatoes was not described in D2;

- glucose and $CaCl_2 \cdot 2H_2O$ had been dissolved in 150 ml water and sterilized separately from the filtrated potato/water mix; in D2 the potato/water mix was directly combined with glucose and $CaCl_2 \cdot 2H_2O$ and then sterilized;
- for the fermentation, 25 plates had been chosen in D55, whereas no information existed in D2 on the thickness and number of the plates;
- it was unclear which part of the cells had been collected; according to D2 "the cells were collected";
- a freeze-drying process had been chosen in D55; according to D2, simply "dry cells" were obtained;
- no yield was mentioned; in D2 the yield was 26.7g;
- the ARA content of the oil in D55 was about 55%; in D2 the ARA content was considerably higher (72.9%).
- the alleged amount of triglycerides was about 95% as measured with GC and Iatroscan; in D2 the purity of the product "in terms of total triglycerides" was over 96% - no measurement technique was given in D2.

From points (i) and (ii) it followed that D2 did not anticipate the oil of claim 1.

(d) *Inventive step - claim 1*

As set out in the patent specification the problem to be solved was to provide a microbial oil with a high oxidation stability (determined as Rancimat

Induction Time, RIT, in the absence of exogeneously added stabilizing compounds). The problem was solved by providing an oil with a triglyceride content of 93 to 97%. This was clearly shown in the experiments D20, D49 and D50.

A skilled person starting from D5 as closest prior art was not given an incentive to increase the triglyceride content in order to solve the problem posed. Because, as shown above, example 1 of D2 contained a non-enabling disclosure the meaning of the term "the purity of this product in terms of total triglycerides was over 96%" was ambiguous and therefore could not, in combination with D5, render the claimed oil obvious.

Inventive step - claim 10

The sequence of process steps (a) to (d) of the claimed process allowed a pre-treatment of the biomass before extraction under mild conditions, thereby avoiding deterioration of the thermo- and oxidation-sensitive PUFAs. This aspect of the invention was clearly indicated in the patent specification, inter alia paragraphs [0031] and [0065]. In paragraphs [0042], [0045] and [0052] it was further disclosed that the claimed process made the process for obtaining the microbial oil more effective in that the granulation step assisted the drying of the biomass and enabled a cost effective and efficient extraction of the PUFA oil in a high quality, e.g. via the percolation extraction method. Example 16 in conjunction with Figure 4 demonstrated the high

efficiency of the percolation extraction of a dried granulated Mortierella biomass with hexane at mild conditions of 20°C, where the equilibrium point was reached after 2 hours.

A skilled person would not consider D7 as the closest prior art because:

- D7 related to the purification of micro-organism products by extracting the micro-organism product in granulated form with an organic solvent in order to remove lipids and residual hydrocarbons, something which the inventors of D7 were not looking for; thus, the focus of D7 was to provide a purified granulated micro-organism product which was free from lipids/hydrocarbons and which was then suitable for use as a foodstuff; in contrast, the claimed process was aimed at obtaining a PUFA-containing oil of high quality;
- D7 was not related to PUFAs; it was questionable whether D15 unambiguously showed that the lipid in D7 obtained in example 1 from Candida tropicalis necessarily contained PUFAs because it could be deduced from the abstract of D15 that the production of unsaturated fatty acids from microorganisms strongly depended on the cultivation conditions;
- D7 did not disclose the granulation of the biomass into granulated particles followed by drying the granular particles to give dried granules, as required in steps (b) and (c) of the claimed process. In this regard, it was questionable whether the thermal treatment of

the granulated microorganism disclosed on page 2, lines 9 to 18 was a process of removing water, ie a drying process in the sense of step (c) of the claimed process;

- it was not clear that D7 disclosed the granulation of a biomass with a dry matter content of from 25 to 80% as required in step (a). In example 1 of D7, a powder with a water content of 5% was granulated.

Also, a combination of D7 with D6 would not lead to the claimed process because D6 - like D7 - was not related to the production of an oil for use in a foodstuff, but to whole harvested microorganisms that were mixed with feed compositions.

From the above it followed that also the process of claim 10 was based on an inventive step.

(e) Sufficiency of disclosure

When considering sufficiency of disclosure the patent as a whole had to be considered. At least one way of obtaining the claimed oil was disclosed in the patent specification. In this conjunction it was a routine task for a skilled person to test the suitability and cultivation conditions for microorganisms other than Mortierella alpina. As regards example 17 of the patent it should be noted that the example related to the process of claim 10, which was not limited to a specific triglyceride content.

Furthermore, no experimental evidence had been provided by the appellant showing that the invention could not be performed.

The claimed invention was therefore sufficiently disclosed.

XV. The appellant requested that the decision under appeal be set aside and the patent be revoked.

XVI. The respondent requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request filed with the letter dated 6 October 2009.

Reasons for the Decision

1. The appeal is admissible.

2. Admissibility of document D44A

In its letter dated 20 October 2011 and during the oral proceedings the appellant requested that the document D44A be not admitted into the proceedings. D44A, relating to NMR data concerning the triglyceride content of oils obtained in D44 (a rework of example 1 of D2) was filed very late by the respondent with its letter dated 30 September 2011.

In the end the results presented in this document were, however, irrelevant for the decision of the board. There was therefore no need to decide on the admissibility of this document.

3. Clarity - Article 84 EPC

Claim 1 according to the main request is based on claim 1 as granted and includes the limitation that the PUFAs are more precisely defined according to granted claim 3. This basically means that granted claim 3 becomes the new independent product claim in which the reference to granted claim 1 has been substituted by the full text of granted claim 1.
It is established case law that such a "reformulation" of a granted claim is not objectionable under Article 84 EPC (eg T 381/02, point 2 of the reasons).

Apart from this the board notes that the alleged unclarity (% of triglyceride content, point XIII(b)) is part of granted claim 1 and is not affected by the further definition of the PUFA.

Process claim 10 remains unchanged and corresponds to claim 12 as granted.

Consequently, the claims of the main request are not objectionable under Article 84 EPC.

4. Rule 80 EPC

According to Rule 80 EPC amendments must be occasioned by a ground for opposition under Article 100 EPC.

In its interlocutory decision the opposition division maintained the patent on the basis of claims 1 to 25 as granted, after deletion of claims 26 and 27 (see

point III). This set of claims 1 to 25 constituted the main request at the beginning of the appeal proceedings ("old" main request).

With the grounds of appeal the appellant attacked claim 1 of the "old" main request, which was not limited as to the nature of the PUFA contained in the claimed oil, ***inter alia*** for lack of novelty in view of D2, D3, D4 and D43.

The appellant's attack was taken into account by the respondent by filing, with the letter dated 6 October 2009, a new main request in which the PUFA was limited to C20 or C22 ω-3 or a C20 ω-6 fatty acid and which now excluded γ-linolenic acid. This limitation removed D3, D4 and D43 as potentially novelty-anticipating documents. The amendment to claim 1 was therefore occasioned at least by the novelty attack of the appellant and therefore complies with Rule 80 EPC.

5. Sufficiency of disclosure

Claim 1 encompasses a microbial oil which comprises at least one specified PUFA and which has a triglyceride content of 93 to 97%. The claim covers any oil which is derived from any microorganism, be it, for example, as described in paragraph [0029] of the patent specification, a bacterium, a yeast, a fungus, an algae, or for that matter any other microorganism. Since, however, the patent in suit demonstrated in respect of only one singe fungal species, namely ***Mortierella alpina***, that the claimed oil could be produced, the appellant argued that it was not credible that the oil claimed in claim 1 could be provided via any

microorganism. In fact, the skilled person would not be able to readily perform the invention over the whole area claimed without undue burden and without requiring inventive skills.

It is true that Examples 16 and 20 in the patent specification are the only examples which exemplify an oil with a triglyceride content of 93% to 97% as claimed in claim 1. In both examples the oils are derived from ***Mortierella alpina***. Examples 17 and 18 exemplify an oil derived from ***C. cohnii*** for which the triglyceride content is below 93% (67% in example 17). However, in respect of the pointer in example 18 (paragraph [0201]) that the crude oils (ie those obtained after hexane extraction) can be refined according to usual methods for edible/vegetable oils, the board is not in doubt that the triglyceride content of oils derived from ***C. cohnii*** can be enhanced by methods which belong to the common general knowledge of a skilled person (e.g. column chromatography). Furthermore, the indication in paragraph [0072] that the fermentation conditions for the microorganisms will depend on the organism used, in conjunction with the disclosure of various culturing conditions for selected microorganisms in the table of comparative example 19, would enable a skilled person to adapt the culturing conditions and the lipid production to a selected microorganism.

A major part of the teaching in the patent specification deals with the process for obtaining a PUFA-containing microbial oil including steps (a) to (d) of the process of claim 10. Disclosure of this aspect of the invention begins in paragraph [0032] and is

illustrated with a number of examples and comparative examples.

From the above the board concludes that the invention is sufficiently disclosed and can be carried out by a skilled person, in particular because the appellant's argument was not supported by any convincing evidence.

6. *Novelty - claim 1*

6.1 With respect to the feature "triglyceride content" in claim 1, it is important to note that this feature relates to the tri-fatty acid esters of glycerol only, excluding mono- and/or diglycerides (see in this context paragraph [0025] and example 20 of the patent specification). In fact, this is the way in which the parties have interpreted claim 1 throughout the proceedings.

6.2 It was uncontested by the parties that, in view of the limitations to claim 1 of the main request, the only document which was relevant for the assessment of novelty was D2.

D2 describes a skin cosmetic, a skin keratin improver and a skin acne treatment, each containing an arachidonic acid-containing lipid (page 1, "Claims 1 to 3"). As set out on page 3, line 5 et seq., examples of such lipids which may be used for the invention are *inter alia* "(1) mono-, di- and triglycerides containing arachidonic acid as the principal structural fatty acid, … ". In a preferred embodiment the arachidonic acid-containing lipids are products of filamentous bacteria belonging to the genus *Mortierella* (page 3,

lines 20-22), ***Mortierella alpina*** being specifically mentioned (page 3, line 24).

With regard to the production of lipids from filamentous fungi, the passage bridging pages 4 and 5 reads as follows:

"For example, after culturing in the medium described above, the cells are separated and then crushed and extracted simultaneously in a chloroform/methanol mixed solvent. The extract is subjected to silica gel chromatography to obtain a triglyceride fraction (1) and a polar lipid fraction (4). The triglyceride fraction (1) is esterified by a conventional method to obtain an ester fraction (2), while hydrolysis by a conventional method can give a fraction (3) of a fatty acid mixture or salt thereof. Thin-layer chromatography shows that no other impurities are found in fractions (1), (2) and (3). Fraction (4) contains 5 to 6% sterols and the remainder a lipid mixture of phospholipids. Mono- and diglycerides can be obtained by partial hydrolyzation of the triglycerides or by reaction of (2) or (3) with glycerol. By using hexane in the extraction step it is possible to obtain a lipid composed mainly of (1)."

Example 1 of D2 discloses an ARA-containing lipid product 1A derived from ***Mortierella alpina*** which was isolated from cultured and harvested dry cells after hexane extraction and purification by common methods (removal of solvent, decolorization/deodorization) and which is ***inter alia*** characterized by its purity as follows:

"The purity of this product in terms of total triglycerides was of over 96%."

6.3 The meaning of the term "triglycerides" in example 1 of D2

6.3.1 The novelty objection raised by the appellant against claim 1 is based on example 1 of D2, and in particular reference was made to the above cited purity of over 96%%. It was the appellant's position that the phrase "purity in terms of total triglycerides" in example 1 of D2 refers to the actual triglyceride content in the oil, as distinct from mono- and diglycerides and other components in the non-polar oil fraction (i.e. a strict scientific meaning). On the other hand, the respondent took the position that the term "triglyceride" was used in example 1 of D2 in its non-scientific meaning and denotes the neutral lipid fraction that predominantly contains triglycerides but includes mono- and diglycerides and other components.

Thus, the decisive issue with regard to the assessment of novelty of the subject-matter of claim 1 in view of example 1 of D2 is the interpretation of the phrase "purity in terms of total glycerides", because Example 1 of D2 is novelty-destroying only if the expression "total glycerides" clearly and unambiguously has the same meaning as the term "triglyceride" as used in the patent, namely the tri-fatty acid esters of glycerol (see point 6.1 above).

6.3.2 The board notes that the term "triglyceride(s)" is used in D2 in different contexts.

(a) Page 3, item (1) refers to mono-, di- and triglycerides containing arachidonic acid. There can be no doubt that the term "triglycerides" in this passage has to be understood in its scientific meaning, ie as tri-fatty acid esters of glycerol.

(b) In the above cited paragraph bridging pages 4 and 5 (point 6.2) the term "triglyceride fraction (1)" is contrasted with the term "polar lipid fraction (4)". A polar lipid is the complement to a non-polar (or neutral) lipid. It is therefore doubtful that the term "triglyceride fraction (1)" in the context of this passage refers only to the triglyceride portion of the neutral fraction, excluding the mono- and diglycerides, which are common constituents of non-polar oils and fats. Rather, it appears more realistic to assume that the non-polar fraction in total, including the mono- and diglycerides, is meant by "triglyceride" in this passage. The last sentence in this paragraph "By using hexane in the extraction step it is possible to obtain a lipid composed mainly of (1)." should therefore be understood in the sense that the triglyceride fraction (1) as a hexane extract represents the total non-polar fraction.

(c) Since the oil of example 1 is isolated from a ***Mortierella alpina*** biomass as an hexane extract, it is reasonable to assume in the light of the

considerations in (b) above that this extract represents the non-polar (neutral) lipid fraction. For these reasons, it is likely that the expression "in terms of triglycerides" characterises the whole non-polar lipid fraction rather than only the tri-fatty acid ester portion of this hexane extract.

6.3.3 From the above it follows that there is no clear and unambiguous disclosure in example 1 of D2 that the value "over 96%" quantifies the triglycerides as the tri-fatty acid ester portion of the oil in the sense of the claimed invention.

6.4 Enabling disclosure of example 1 of D2

In order to further support their respective positions that the lipid mentioned in example 1 of D2 does or does not have a triglyceride content of over 96% (in the sense of claim 1), both parties attempted to reproduce example 1 of D2 (appellant: D55, D56, D56A; respondent: D44). In the appellant's view, the disclosure of example 1 was enabling (point XIII (c) (ii)), in the respondent's view, not (point XIV (c) (ii)).

6.4.1 Example 1 of D2 describes process steps for preparing an ARA-containing lipid from Mortierella alpina "IFO 8586 [sic] (the correct number is 8568, as pointed out by the respondent in footnote 1 at page 2 of its experimental report D44, something that was not contested by the appellant) including the preparation of the culture medium, the culturing conditions, harvesting of the cells and the extraction/purification

of the oil. The property of the resulting oil is characterised by the following set of features:

- its purity in terms of total triglycerides of over 96%;
- its fatty acid composition, ***inter alia*** specifying an ARA-content of 72.9%.

6.4.2 In the board's judgment, a proper rework of this example should result in an oil which principally meets these properties, apart from minor deviations in the measured values, e.g. owing to deviations in starting material quality or measurement conditions.

However, the experiments of both parties (appellant: D55, D56, D56A; respondent: D44) both resulted in an oil whose measured ARA-content was far below the value of 72.9% given in example 1 of D2 (D55: 53.54/53.72%, Table 1; D44: between 40.8 and 43.4%, Tables 1 and 2), something which cannot be explained simply by experimental inaccuracies. Owing to this considerable differences in the ARA-values between the oil of example 1 of D2 and the oil resulting from the experiments performed by both parties, the board has serious doubts that it is possible, following the protocol of example 1 of D2, to arrive at an oil which meets the properties in respect of both the purity and the fatty acid profile indicated in example 1 of D2.

6.5 It follows from points 6.3 and 6.4 that the claimed triglyceride content is not clearly and unambiguously disclosed in example 1 of D2 and also that the experimental protocol is not sufficient to enable a skilled person to rework example 1 properly. The

claimed oil is therefore novel over D2. These considerations also apply to the use of the oil according to claims 22 and 23.

7. *Novelty - claim 10*

Novelty of the claimed process was not contested by the appellant. Because the claimed sequence of the process steps (a) to (d) is not explicitly disclosed in any of the cited prior art documents the process of claim 10 is novel.

8. *Inventive step - claim 1*

8.1 According to paragraphs [0019] to [0024] of the patent specification, the invention relates in a first aspect to a microbial PUFA-containing oil for use in foodstuffs, as a nutritional supplement or in cosmetic compositions. The oil has a high triglyceride content and a high Rancimat induction time, ie a high oxidation stability. In paragraph [0021] it is pointed out that the oil with a triglyceride content of 93 to 97% as claimed has a higher oxidative stability than microbial oils of the prior art.

8.2 The board agrees with the appellant that D5 is representative of the closest prior art. This document discloses a microbial oil for use in infant formulae with a high ARA-content and a low content of eicosapentaenoic acid (EPA) (paragraph bridging pages 4 and 5). The oil can inter alia be isolated via hexane extraction from a biomass obtained by culturing ***Mortierella alpina*** and consists predominantly of

triglyceride (page 11, lines 24/25 in conjunction with page 15, lines 22-24).

8.3 In the light of the closest prior art the respondent saw the problem underlying the subject-matter of claim 1 in the provision of a microbial oil having a higher oxidative stability, in particular in respect of its content of PUFAs.

As a solution to this problem claim 1 proposes a PUFA-containing microbial oil that is essentially characterised by a triglyceride content of from 93 to 97%.

8.4 In its experimental report D50 the respondent compared the oxidative stability of two ARA-containing oils, both stemming from the same starting ARA oil. A first part of the starting ARA oil was heat treated with lipase (in order to reduce the triglyceride content) and thereafter caustically refined (in order to remove free fatty acids) and deodorized. The second part of the starting ARA oil was heat treated without lipase and then caustically refined and deodorized; the resulting oil is the reference oil (D50 items 1. to 3.) and represents the oil according to the invention. Table 3 shows the compositional data of both oils in respect of free fatty acids and mono-, di- and triglycerides:

Lipase-treated oil	
Triglycerides	85.0%
Diglycerides	13.2%
Monoglycerides	<0.4%
Free fatty acids	<0.4%

Reference oil (according to the invention)	
Triglycerides	94.4%
Diglycerides	1.8%
Monoglycerides	<0.4%
Free fatty acids	<0.4%.

In both oils the amounts of monoglycerides and free fatty acids are equal and also low. In the reference oil the triglyceride content is high in relation to the diglycerides and lies in the claimed range. In the lipase-treated oil (comparative oil) the ratio triglycerides/diglycerides is decreased.

The last row in Table 3 shows that the oxidation stability (RIT) of the reference oil according to the invention with a high triglyceride/diglyceride ratio is considerably higher (2.2 days) than the lipase-treated oil with a reduced triglyceride/diglyceride ratio (0.9 days). Because the amount of free fatty acids and monoglycerides in both oils is equal and low, it can be deduced from the experiment that the enhanced oxidative stability of the reference microbial oil representing the invention is exclusively due to the presence of increased triglycerides in relation to the diglycerides.

These results of the respondent are not invalidated by the counter experiments D38, D38A, D39 and D39A provided by the appellant because these experiments were conducted under different conditions on the basis of the ARA-containing microbial oil SUNTGA40S, whose triglyceride content and free fatty acid content was modified by the external addition of 1-palmitoyl-2-oleoy-sn glycerol or octadecanoic acid in order to

decrease the percentage portion of the triglycerides or to increase the amount of free fatty acid.

The board is therefore satisfied that a triglyceride content of 93 to 97% in the microbial oil enhances its oxidative stability.

8.5 It remains to be decided whether the claimed solution, namely the microbial oil of claim 1, is obvious in view of the cited prior art.

None of the cited documents contains any information that the oxidative stability of PUFA-containing microbial oils is influenced by the triglyceride content of the oil. Document D2, which was combined by the appellant with D5 in order to attack inventive step, does not disclose any link between the purity of the oil of example 1 of over 96% in terms of total triglycerides and the oxidative stability. In addition, as already mentioned in point 6.3.2 (c) above, the actual triglyceride content of this oil (as tri-fatty acid esters of glycerol in the sense of the invention) is uncertain.

8.6 The oil of claim 1 is therefore based on an inventive step.

9. *Inventive step - claim 10*

9.1 A second aspect of the invention relates to the preparation of a PUFA-containing oil from a microbial biomass, wherein the biomass can be pre-treated under relatively mild conditions before extraction of the oil in order to avoid degradation of the thermo- and

oxidation-sensitive PUFAs (paragraph [0031] of the patent specification).

9.2 Both the appellant and the opposition division considered D7 representative of the closest prior art.

D7 is concerned with a process of purification of a microorganism product obtained by cultivating a hydrocarbon utilising strain of a microorganism. The process comprises the step of extracting the micro-organism product in granulated form with an organic solvent for hydrocarbons/lipids in order to obtain a micro-organism material which has a reduced hydrocarbon/lipid content or which is free from hydrocarbons/lipids (claim 1). Although the process of D7 is directed to a lipid-reduced or lipid-free microorganism material, the extraction process of D7 results in establishing a lipid, i.e. "a useful source of lipids" (page 3, lines 7-10). However, it is not the intention of the teaching in D7 to extract oils with polyunsaturated fatty acids.

9.3 The problem underlying the subject-matter of claim 10 in the light of D7 can be seen in the provision of a process for isolating a PUFA-containing oil from a microbial biomass under mild conditions so that the oil is not exposed to conditions causing degradation.

9.4 As a solution to this problem the patent in suit proposes a process according to claim 10 which is characterised by the following process steps:

a) providing a biomass with a dry matter content of from 25 to 80%;

b) granulating the biomass into granular particles;
c) drying the granular particles to give dried granules; and
d) extracting or isolating the oil from the dried granules.

9.5 The experimental evidence provided in the patent specification, and in particular example 16 (paragraphs [0192] to [0194] in conjunction with Figures 3 and 4), shows that the percolation extraction of the dried granulated biomass under mild conditions (20°C) with hexane is very effective and reaches the equilibrium point after 2 hours. Thus the board is satisfied that the above defined technical problem is plausibly solved.

9.6 It remains to be decided whether the subject-matter of claim 10 is obvious in view of the cited prior art.

9.6.1 D7 itself does not provide any hint to the claimed solution for the following reasons:

While the extraction step is the same in D7 and in the process of claim 10, the granulation formation is different. Thus, D7 does not expressly disclose the sequence of the process steps (a) to (d) as claimed in claim 10. In particular, it is not disclosed in D7 that a biomass with a dry matter content of from 25 to 80% is provided in accordance with step (a), which is then granulated in step (b) followed by a drying step. According to example 1 of D7 a paste containing 5% water (ie a dry matter of about 95%) is granulated.

Contrary to the respondent's view expressed in the oral proceedings and the opposition division's observation on page 16, 4th paragraph of the appealed decision that "… D7 does not disclose a drying step, but only a heat treatment", the appellant argued that D7 provided an inherent drying step with the "heat treatment" disclosed on page 2, lines 9-18. However, this argument is not convincing as no explicit disclosure is found in D7 that this heat treatment serves for drying the granules. The only drying techniques mentioned in D7 in context with a powder are spray drying, drum drying, evaporation or fluid bed drying (column 2, lines 100 to 109). Heat treatment (for instance when carried out in a closed system) is therefore not necessarily equivalent to drying. In fact there is no teaching in D7 that one has to dry the formed granules.

On the other hand the process of claim 10 relates to drying a granulated moist product. In other words, the concept taught in the patent in suit is absent in D7. Thus, D7 itself does not provide any incentive to modify the disclosed process in the direction of the claimed solution.

The board also agrees with the respondent that D7 is not focused on the isolation of a microbial oil from the biomass for the purpose of using the oil as nutritional supplement, foodstuff or in cosmetic formulations. Instead, it is the aim of D7 to provide purified granulated micro-organism products which are free from lipids and hydrocarbons, with the aim of using these granulated products as a foodstuff (page 1, lines 10 to 19; page 3, lines 1 to 6). At best, the extracted oil is a by-product for the use as leather

fat liquoring or a source of fatty acids (page 3, lines 7 to 10). In this respect also, D7 does not provide any incentive towards an improvement concerning the by-product.

9.6.2 There is also no indication in any of the other cited documents of the prior art that the above defined problem can be solved by pre-treating the microbial biomass by adjusting its dry matter content, followed by granulation and drying of the granules as claimed in claim 10, steps (a) to (c) before extracting it in step (d).

D6 describes a process for the production of whole-celled or extracted microbial products with a high concentration of ω-3 highly unsaturated fatty acids (HUFA). The harvested whole-cell microbial product can be added to processed foods as a nutritional supplement, or to fish and animal feeds to enhance the HUFA content of products produced from these animals. The lipids containing these fatty acids can also be extracted and used in nutritional, pharmaceutical and industrial applications (abstract). With regard to the latter alternative, the extraction of HUFA containing lipids from a microbial biomass may be carried out with hexane. In column 13, lines 41 to 52 it is disclosed that the harvested cells are ruptured or permeabilized by well known techniques followed by solvent extraction of the lipids from the ruptured cells. Thus, this process does not include a granulation step. The other alternative described in D6 of extrusion/granulation of harvested cells does, however, is not aimed at separating the lipids from the biomass via extraction. Instead, the whole extruded biomass is directly fed to the animals

(column 12, lines 32 to 59). Therefore, a combination of D7 with D6 is only possible with hindsight and would not even lead to the claimed process in view of the missing drying step.

According to D5 (see point 8.2 above) the biomass can be dried and then pressed or crumbled before the ARA-containing oil is extracted, e.g. with hexane (page 11, lines 12 to 25). This disclosure, however, would not induce a skilled person to granulate the biomass and to dry the granules before extracting it, as required in steps (b) and (c) of the claimed process.

Therefore, a skilled person would not arrive at the claimed process by a combination of D7 or D6 with D5.

9.7 In an alternative attack, not pursued at the oral proceedings, the appellant argued that the subject-matter of claim 10 was not inventive over D8 combined with either D57 or D58. D8 was considered to represent the closest prior art in this attack, as it also specifically relates to a process for obtaining a microbial oil comprising at least one PUFA. For example, the biomass from ***C. cohnii*** can be used to obtain a microbial oil comprising more than about 90% triglycerides containing ***inter alia*** DHA (docosahexaenoic acid). (column 5, lines 47-57).

The board agrees with the respondent (letter 30 October 2011, page 20) that the appellant mischaracterises the statement in D8 that "Additional processing steps … will be similar to those involved in conventional vegetable oil processing … " (column 6, lines 14-20). These additional steps appear to relate rather to e.g.

bleaching, deodorizing and the like, but not to the oil extraction. Thus, the starting point for combining D8 with D57 or D58 is flawed. Consequently this attack must fail.

9.8 In summary, the process of claim 10 is therefore based on an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of claims 1 to 23 according to the main request filed with the letter dated 6 October 2009 after any necessary consequential adaptation of the description and the figures.

The Registrar The Chairman

G. Röhn W. Sieber