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Datasheet for the decision of 22 May 2025

Case Number: T 1065/23 - 3.3.09

Application Number: 14809775.1

Publication Number: 3071045

IPC: A23J1/14, A23J3/14

Language of the proceedings: EN

Title of invention:
METHOD FOR EXTRACTING PEA PROTEINS

Patent Proprietor:
Cosucra Groupe Warcoing S.A.

Opponents:
Roquette Frères
Cargill, Incorporated

Headword:
Pea Protein Extracts/COSUCRA

Relevant legal provisions:
EPC Art. 54(2), 56, 83, 123(2)
RPBA 2020 Art. 12(4), 12(6), 13(2)

Keyword:
Auxiliary request 1: added subject-matter - (no); sufficiency of disclosure, novelty and inventive step - (yes)
Admission of new submissions filed with the statement setting out the grounds of appeal - (no)
Admission of submissions filed after issuance of the board's communication under Article 15(1) RPBA: - (no)

Decisions cited:
G 0002/10, G 0003/14, T 0150/82, T 0350/20

Catchword:

The fact that a granted product-by-process claim defines a product which could be satisfactorily defined by reference to its composition, structure or other testable parameter is not, as such, a ground for opposition set out in Article 100 EPC. Thus, an objection cannot be raised on this sole ground against that granted claim (reasons 4.35 to 4.38).

When assessing inventive step, the fact that the cut-off values of a range defining a claimed parameter exclude some lower or higher values suitable to achieve a relevant technical effect is not, as such, a reason to consider the selection of those cut-off values "arbitrary" and the claimed subject-matter obvious over the prior art. What counts is that the effect obtained operating within the claimed range goes beyond that achieved following the teaching of the prior art (reasons 5.12 to 5.25).

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Case Number: T 1065/23 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 22 May 2025

Appellant: (Patent Proprietor)	Cosucra Groupe Warcoing S.A. Rue de la Sucrerie 1 7740 Warcoing (BE)
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Appellant: (Opponent 2)	Cargill, Incorporated 15407 McGinty Road West Wayzata, MN 55391 (US)
Representative:	Forresters IP LLP Skygarden Erika-Mann-Straße 11 80636 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 11 April 2023 concerning maintenance of the European Patent No. 3071045 in amended form.**

Composition of the Board:

Chairman	A. Haderlein
Members:	A. Veronese
	A. Jimenez

Summary of Facts and Submissions

I. Appeals were filed by the opponents (opponent 1 and opponent 2) and by the patent proprietor against the opposition division's decision finding that the European patent as amended according to the auxiliary request 6 filed during the oral proceedings before the opposition division meets the requirements of the EPC.

II. With a letter dated 21 May 2025, opponent 1 withdrew its appeal. Since both the proprietor and opponent 2 are appellants, in the decision they will be identified as "the proprietor" and "opponent 2", respectively.

III. With their notices of opposition, the opponents had requested revocation of the patent in its entirety on the grounds under Article 100(a) (lack of novelty and lack of inventive step), 100(b) and 100(c) EPC.

IV. The documents submitted during the opposition proceedings included:

D1: WO 2010/022702 A1
D2: US 2013/0017310 A1
D3: A. R. Taherian et al., Food Research International 44, 2011, 2505-14
D5: WO 2014/008578 Al
D6: WO 2011/137524 Al
D7: A. K. Sumner et al., Journal of Food Science 46, 1981, 364-72
D12: US 4,766,204
D13: FR 2 196 754
D14: US 4,060,203

D15: Experimental tests filed by opponent 1 with its notice of opposition

D25: "The Isolation, Modification and Evaluation of Field Pea Proteins and Their Applications in Foods", Thesis for the Doctor of Philosophy by Shaoiun Tian, Victoria University, 1998

D28: Experimental tests filed by the proprietor by letter of 4 August 2021

D30: Experimental tests filed by opponent 2 by letter of 2 December 2022

D38: J.E. Kinsella, Critical Reviews in Food Science & Nutrition 7(3), 1976, 219-80

D39: J.F. Zayas, Gelling Properties of Proteins; Functionality of Proteins in Foods, 1997, 310-66

V. Claims 1, 9, 10 and 11 as granted read:

"*1. A method for extracting pea proteins, comprising the steps of:*

(a) providing an aqueous composition comprising pea proteins;

(b) isolating said pea proteins from said aqueous composition comprising pea proteins;

(c) obtaining said isolated pea proteins as an aqueous slurry having a pH ranging from 4.0 to 5.8; and

(d) subjecting said aqueous slurry having a pH ranging from 4.0 to 5.8 to a temperature ranging from 75°C to 210°C;

wherein step (b) comprises adjusting the pH of said aqueous composition comprising pea proteins to a value ranging from 4.0 to 5.8, preferably ranging from 4.5 to 5.5;

wherein step (d) comprises subjecting said precipitated pea proteins to a heat treatment at a temperature ranging from 115°C to 210°C for a time ranging from 15 s to 0.01 s; at a temperature ranging from 95°C to 115°C for a time ranging from 5 min to 15 s; at a temperature ranging from 75°C to 95°C for a time ranging from 15 min to 5 min; at a temperature ranging from 75°C to 110°C for a time ranging from 10 min to 2 min; at a temperature ranging from 80°C to 100°C for a time ranging from 8 min to 5 min; or at a temperature ranging from 130°C to 150°C for a time ranging from 8 s to 1 s".

"*9. The method according to any one of claims 1 to 8, wherein prior to or during step (b) said aqueous composition comprising pea proteins, or said pea proteins are subjected to a heat treatment, preferably pasteurization; said protein comprising fraction is subjected to a temperature of at least 30°C, for example at least 40°C, for example at least 50°C, for example said protein comprising fraction is subjected to a temperature ranging from 30°C to 90°C, more preferably ranging from 50°C to 80°C, even more preferably ranging from 55°C to 75°C.*"

"*10. Pea protein extract obtainable by the method according to any one of claims 1 to 9*".

"*11. Pea protein composition, comprising at least 60 wt% of protein based on the total dry matter of the composition, wherein said pea protein*

composition has a nitrogen solubility index at pH 7.0 of at most 15%, as measured on a aqueous composition comprising 3 wt% of said pea protein composition based on the total weight of the aqueous composition."

VI. In its decision, the opposition division found, *inter alia*, the following.

- The claims as granted (main request) did not contain added subject-matter.

- The method defined in claims 1 to 9 as granted was novel over the teaching of D1 and D2. The pea protein extract of claim 10 as granted, obtainable by the method of the preceding claims, and the pea protein composition of claim 11 as granted were not novel over D3, D5 to D7, D11 and D23.

- The subject-matter of claims 10 and 11 of auxiliary requests 1 to 5 was not novel at least over D7.

- The claims of auxiliary request 6, from which all product claims were deleted, had a basis in the application as filed and satisfied the clarity, sufficiency and novelty requirements. The claimed subject-matter involved an inventive step over D12, the closest prior art, alone or combined with D13. D2 was not the closest prior art.

VII. During the appeal proceedings, the proprietor requested, in the first place, that the patent be maintained as granted. It filed, among others, the following auxiliary requests:

- auxiliary requests 1 to 20 filed with the letter of 21 March 2025

- auxiliary requests 1.1 to 20.1 filed with the statement of grounds of appeal
- auxiliary requests 1.2 to 20.2 filed with the letter of 21 March 2025
- auxiliary requests 1.3 to 20.3 filed with the statement of grounds of appeal
- auxiliary requests 1.4 to 20.4 filed with the letter of 21 March 2025

VIII. During the oral proceedings, the proprietor withdrew its main request that the patent be maintained as granted. Auxiliary request 1 became its first request.

IX. The set of claims of auxiliary request 1, which is the only one relevant for this decision, differs from that of the patent as granted in that claims 11 and 12 as granted were deleted.

X. The arguments set out by opponent 2 relevant for the decision can be summarised as follows.

- Auxiliary request 1 was filed late, increased the complexity of the case and should not be admitted under Article 13(2) RPBA.

- The subject-matter of claims 1 and 9 extended beyond the content of the application as filed.

- The invention defined in claims 1 and 3 was insufficiently disclosed, the technical teaching of these claims being technically incompatible.

- Step (b) of the claimed method did not require a physical separation of the precipitated protein from the aqueous composition containing it.

- Claim 1 was not limited to the production of low-soluble proteins or compositions having a certain pH or colour. It neither specified the order of the listed steps nor required that a heating step be performed after the separation of protein from an aqueous solution.

- The method of claims 1 to 6 and 9 lacked novelty over D1 and D2.

- The product-by-process format of claim 10 was not allowable because the product could be described by specific features defining e.g. its properties.

- The claimed method did not impart new properties distinguishing the product of claim 10 from that of the prior art; pH and colour did not characterise that product either. Thus, the product of claim 10 was not novel over D1 to D3, D5 to D7 and D23.

- The claimed subject-matter did not involve an inventive step over the prior-art documents D2, D7, D12, alone or combined with D13, or over D14 combined with D13. The experimental reports D15 and D30 showed that either the alleged effects were not obtained across the claimed scope or occurred equally outside that scope. Therefore, the problem was the provision of an alternative method and composition. The claimed solution was obvious in view of the cited prior-art documents.

XI. The arguments set out by the proprietor relevant for the decision can be summarised as follows.

- Auxiliary request 1 should be admitted.

- Claim 1 was based on claims 1, 2, 4 and 8 and on pages 24 and 25 as filed. A basis for claim 9 could be found in statements 15 and 16 on page 9, on page 23, and on claim 13 as filed.

- The invention was sufficiently disclosed. Claims 1 and 3 were not incompatible.

- The wording "isolating" characterising step (b) of claim 1 required the separation of precipitated protein from the aqueous composition. Claim 1 was limited to the production of low-soluble proteins. It specified the order of the steps and required heating a precipitated protein.

- The claimed subject-matter was novel over all cited documents. These did not disclose at least one of the steps characterising the claimed method. They further did not disclose a product having the characteristics of a product obtained by the claimed method, in particular low solubility, viscosity and gel strength. This was shown by the tests in the patent and in D28.

- The claimed subject-matter involved an inventive step, irrespective of which of the cited documents was used as the starting point.

- The claimed method differed from those of the prior art in that an aqueous slurry at the claimed pH was subjected to the claimed heating step. The claimed product differed from those of the prior art in its different properties, in particular a lower solubility, gel strength and viscosity. The patent provided convincing evidence that these properties induced advantageous effects in bakery and wine

fining across the entire scope claimed. The selection of the conditions used to carry out the claimed heating step were not arbitrary.

- The prior art did not teach how to obtain proteins having the claimed properties and inducing the claimed effects. Thus, the claimed subject-matter involved an inventive step.

- The argument that the underlying effect was not achieved across the entire scope claimed, set out by the opponents in appeal relying on D30, should not be admitted. D38 and D39, filed by opponent 2 with its letter dated 21 March 2025, and the arguments set out relying on those documents, should not be admitted either.

The requests

XII. The patent proprietor requested that the decision under appeal be set aside and that the patent be maintained on the basis of one on the following requests in the following order:

- auxiliary requests 1 to 20 filed with the letter of 21 March 2025
- auxiliary requests 1.1 to 20.1 filed with the statement of grounds of appeal
- auxiliary requests 1.2 to 20.2 filed with the letter of 21 March 2025
- auxiliary requests 1.3 to 20.3 filed with the statement of grounds of appeal
- auxiliary requests 1.4 to 20.4 filed with the letter of 21 March 2025

XIII. Opponent 2 requested that the decision under appeal be set aside and that the patent be revoked. This had also been requested by opponent 1 before it withdrew its appeal.

Reasons for the Decision

Auxiliary request 1

1. *Admittance*

1.1 The set of claims of auxiliary request 1 was filed by the proprietor by letter of 31 March 2025, after issuance of the board's communication in preparation for the oral proceedings. It differs from the claims of the patent as granted in that independent claim 11 and its dependent claim 12, which define a pea protein composition referring to its protein content and nitrogen solubility index, were deleted. Claim 10, defining a protein composition as a product of the process of claim 1, was maintained.

1.2 Opponent 2 argued that the deletion of claim 11 "*gives rise to a level of complexity which was not present when you consider the claim sets filed at the start of the appeal in thee [sic] sense that there was not a single claim set which involved claim 10 as granted without claim 11*". For this reason, in its opinion, auxiliary request 1 should not be admitted.

1.3 The board does not agree. The deletion of claims 11 and 12 as granted overcomes the objections raised against these product claims, significantly enhancing procedural economy, without giving rise to new issues.

1.4 The filing of auxiliary request 1, in which claims 11 and 12 are deleted and claim 10 is maintained, was also not surprising since it was explicitly anticipated on page 19 of the proprietor's statement setting out its grounds of appeal. Furthermore, as submitted by the proprietor during the oral proceedings, in view of the complexity of the case and the number of objections raised by the opponents, filing auxiliary requests covering all possible scenarios created by the objections at an earlier stage would have caused a proliferation of auxiliary requests, substantially increasing the complexity of the proceedings.

1.5 For these reasons, the board considers that there are exceptional circumstances within the meaning of Article 13(2) RPBA 2020 justifying the admittance of auxiliary request 1 into the appeal proceedings.

2. *Amendments*

Claim 1

2.1 The opposition division decided that claim 1 as granted was based on claims 1, 2, 4 and 8 as originally filed and that, for this reason, it did not contain added subject-matter extending beyond the content of the application as filed.

2.2 Opponent 2 did not agree, arguing that the application as filed did not directly and unambiguously disclose the combination of features of amended claim 1. It noted, in the first place, that the original claims were "multi-dependent". Furthermore that, since amended claim 1 referred to "precipitated pea protein", the feature "precipitation", disclosed in claim 6 as filed, was also included in amended claim 1. Thus, to arrive

at claim 1, it was not sufficient to combine the features of clams 1, 2, 4 and 8 as filed. "Precipitation" had also to be selected from the other means of protein isolation listed in claim 6 as filed. Furthermore, as far as precipitation was concerned, the description as filed pointed to "isoelectric precipitation" rather than to precipitation, as such. For this reason, and considering that the description described a large number of other features, claim 1 resulted, like in case T 350/20, from a selection from a "forest of optional features" disclosed in the application as filed. This selection created new subject-matter.

2.3 The board does not agree with these conclusions. Claims 1, 2, 4 and 8 as filed disclose all the features of claim 1 as granted, including "precipitated pea proteins". These are explicitly mentioned in claim 4 as filed in the same manner as in amended claim 1. Thus, there is no need to make an additional selection from features of claim 6 as filed to arrive at the claimed subject-matter. Furthermore, each of claims 2, 4 and 8 as originally filed refers back to the preceding claims as filed. There is no need to refer to the description as filed either. What is more, the description is in line with the teaching of the claims as filed: the passage from page 25, line 34 to page 26, line 22 describes the claimed heat treatment and page 24, lines 27 to 28, the pH adjustment step.

2.4 In decision T 350/20, the board considered that, in view of the number of dependent claims (six) which had to be combined with the independent claim to arrive at the claimed subject-matter and the manner in which the application was drafted, amended claim 1 contained added subject-matter. However, in that decision, the

board acknowledged that dependent claims may provide a basis for amendments and that whether this is allowable depends on the specifics of the case, in particular on the level of complexity caused, e.g. by the number of optional features (Reasons, point 2.5).

2.5 The specifics of the current case differ from those in T 350/20. Only three dependent claims are combined with the independent claim. Moreover, there is no need to make multiple selections from lists of alternative features disclosed in these claims or to select other features from the description. Thus, claim 1 does not result from selections from a "forest of optional features" disclosed in the application as filed.

2.6 Consequently, claim 1 does not contain subject-matter extending beyond the content of the application as filed.

Claim 9

2.7 Opponent 2 contested the proprietor's view that claim 9 was based on claim 13, statements 15 and 16 on page 9, and the passage on page 23, lines 3 to 16 of the application as filed. It noted that claim 13 as filed did not mention the claimed temperatures, that statements 15 and 16 mentioned neither the ranges of 30 to 90°C and 55 to 75°C nor a generic heat treatment, and that paragraph 23 did not refer to a heat treatment "prior to or during" step (b).

2.8 The board does not find the opponent's arguments convincing. Reading the application as filed, the skilled person would readily understand that claim 13, statements 15 and 16, and the passage on page 23, lines 3 to 16 relate to the same optional heating step

carried out on the "aqueous composition comprising pea proteins" mentioned in steps (a) and (b) of claim 1 as originally filed.

2.9 This means that these parts of the application as filed are linked and relate to the same method.

2.10 Since only steps (a) and (b) relate to the "aqueous composition comprising pea proteins", the additional heat treatment, preferably pasteurisation, can only be carried out "prior to or during step (b)", as recited in statements 15 and 16 on page 9, claim 13 as filed, and contested claim 9.

2.11 All relevant values and ranges characterising contested claim 9 are disclosed in statements 15 and 16 on page 9 as filed and/or in the passage on page 23, lines 3 to 16 as filed.

2.12 Consequently, claim 9 does not contain subject-matter extending beyond the content of the application as filed.

3. *Sufficiency of disclosure*

3.1 Opponent 2 argued that claims 1 and 3 were incompatible because the invention could only be carried out if step (b) was a precipitation step. It noted that:

- step (d) of claim 1 comprised a heat treatment of precipitated pea proteins

- claim 3 required that the isolation step (b) of claim 1 "comprised at least one of precipitation, flocculation filtration and/or chromatography step"

3.2 Precipitated pea proteins could only be obtained by carrying out the precipitation step defined in claim 3. Therefore, as far as claim 3 related to pea proteins isolated by methods other than precipitation (flocculation, filtration and chromatography), the invention could not be carried out. The application did not disclose any example of methods according to these embodiments. Thus, the claimed invention was not disclosed across the entire scope claimed.

3.3 The board does not agree. It is readily apparent that the "said precipitated pea protein" in step (d) of claim 1 has no antecedent in the preceding sentences. Hence, this expression needs further interpretation.

3.4 Reading claim 1, the skilled person would understand that the precipitated pea protein is the pea protein present in the slurry mentioned in step (c). Furthermore, they would understand that this precipitated protein is obtained by adjusting the pH of the composition containing isolated pea protein to a value of 4.0 to 5.8, according to step (b).

3.5 According to claim 3, step (b), in which the pea protein is isolated, comprises also at least one of a precipitation, flocculation, filtration and/or chromatographic step. This means that any of the flocculation, filtration and/or chromatographic steps can be carried out, in addition to the steps defined in steps (b) and (c) of claim 1, in which the pH is adjusted and a slurry is formed by precipitation. Thus, steps (b) and (c) are not incompatible, irrespective of which step mentioned in claim 3 is carried out, in addition to the pH adjustment step defined in claim 1.

3.6 Examples 1 to 3 show how the claimed method can be carried out. In these examples, the protein was isolated by isoelectric precipitation and decantation. Therefore, relying on the teaching of the patent and common general knowledge, the skilled person would be able to carry out the exemplified method and the other variants encompassed by the claims.

3.7 For these reasons, the method defined in claims 1 and 3 is sufficiently disclosed.

4. *Novelty*

4.1 Opponent 2 considered that:

- the method defined in claim 1 lacked novelty over D1 and D2

- the product defined in claims 10 lacked novelty over D1 to D11, D20 and D23

Claim 1

4.2 Opponent 2 contested the opposition division's finding that the method of claim 1 was novel over the teaching of D1 and D2. According to opponent 2, claim 1:

- did not specify the order of the claimed steps, which could thus be performed in random order; for example, heating could precede protein isolation
- did not imply a physical separation of proteins precipitated in step (b) from an aqueous solution
- was not limited to isoelectric precipitation
- did not require the proteins to have particular properties, e.g. a low solubility, pH or colour

4.3 Relying on this interpretation of claim 1, opponent 2 considered the claimed subject-matter to lack novelty over:

- D1, example 2

- D2, paragraphs [0042],[0060] to [0066] and [0077]; the examples; and claims 18 and 22

Novelty over D1

4.4 Example 2 of D1 discloses a method for extracting pea proteins involving: i) preparing an aqueous composition comprising pea proteins having a pH of 6.2, ii) adjusting the pH to 5.2 and heating at 110°C for 20 seconds to induce flocculation, and iii) maintaining the temperature at 90°C for 10 minutes.

4.5 The board agrees with opponent 2 that claim 1 does not require that the isolated protein be physically separated from the aqueous solution in which the protein is isolated, e.g. by precipitation. In other words, in the specifics of the current case, "isolation" encompasses a step in which the protein is precipitated out from but is still present in suspended form in the aqueous composition. Hence, the skilled person would understand that the "said precipitated pea protein" in claim 1 is obtained by "isolating said pea protein from said aqueous composition" by precipitation but can still be present in the "aqueous slurry" mentioned in that claim.

4.6 Nevertheless, claim 1 clearly distinguishes a step in which the protein is isolated, by adjusting the pH within a range of 4.5 to 5.5, and a further step in which the isolated protein, which is dispersed in a

slurry, is subjected to a heating step characterised by a specific combination of temperature and heating time. The step of "isolation" and the heating step are clearly distinguished.

4.7 Example 2 of D1 teaches that the pH of the pea protein composition is adjusted to 5.2 and that the temperature is set at 110°C for 20 seconds. However, D1 does not teach to adjust the pH and to maintain it for a sufficient time so that the protein is "isolated" (e.g. by precipitation or flocculation), as implied by claim 1. Nor does D1 teach that this step results in a slurry which is subjected to a heating step characterised by the claimed combination of temperature and time. D1 only teaches that the pH is adjusted, that the temperature is raised to 110°C for 20 minutes and that the mixture is left at 90°C for 10 more minutes. An isolation step and a following heating step at the claimed temperature and time are not directly and unambiguously disclosed in this document.

4.8 Thus, as already decided by the opposition division, the claimed method is novel over D1.

Novelty over D2

4.9 The board agrees with the proprietor that the claimed method is novel over the teaching of D2. D2 describes a method for obtaining a soluble plant protein extract involving a step in which the protein is isolated by isoelectric precipitation followed by a "functionalisation" step involving heating and then cooling the protein extract. The preferred plant protein is pea protein. See paragraphs [0001], [0042] and [0064] to [0066] and the examples.

4.10 However, as noted by the proprietor, paragraph [0077] of D2 entails an additional step in which the pH is adjusted to a value within the range of 6.2 to 9. This step can be carried out before or after the heating step. When this pH adjustment step is carried out before the heating step, the protein is heated at a pH which differs from that specified in claim 1.

4.11 Referring to paragraph [0042] of the opposed patent, opponent 2 argued that, in view of the wording "comprising", claim 1 did not define the order of the listed steps. It also argued that the wording of claim 1 did not exclude an additional step in which the pH is adjusted to a value outside the range of 4.0 to 5.8 before the heating step.

4.12 These arguments are not convincing. The skilled person would understand that the properties of a protein extract will change substantially if it is subjected to heating at different pHs. Hence, that person would understand that the order of some of the steps in claim 1 is purposive and should not be changed, in particular, that the slurry comprising the precipitated protein should have the pH indicated in step d) during the heating step. This is confirmed by paragraph [0042] of the patent. For these same reasons, the skilled person would also understand that claim 1 does not entail a further step in which the pH of the slurry is changed to a value outside the range of 4.0 to 5.8 before the heating step.

4.13 All methods exemplified in D2, including those for obtaining pea protein, include, before the heating step, a step in which the pH is adjusted to a value outside the range of 4.0 to 5.8 specified in claim 1. In none of the exemplified methods a slurry having the

claimed pH is subjected to heating. Furthermore, as noted by the proprietor, paragraphs [0063] and [0066] of D2 teach that the protein extract subjected to heating is in its native state. It is reasonable to assume that the pH adjustment to 6.2 to 9 set out in paragraph [0077] aims to stabilise or restore the protein in its native state. This means that according to D2, it is preferred that pH adjustment be carried out before the heating step, especially when pea protein is used. This step is ruled out by claim 1 of the opposed patent.

4.14 Furthermore, paragraph [0066] of D2, which teaches to carry out a heating step, does not specify the duration and the temperature of the heating. Paragraph [0070], which gives some information on the heating step, mentions a temperature of between 100 and 160°C for less than 0.1 seconds. This range overlaps but does not entirely fall within the ranges specified in claim 1. Claim 18 of D2 refers to another heating step, but it is evident that "soluble plant proteins" are heated, rather than insoluble pea proteins in a protein slurry, as required by claim 1.

4.15 To arrive at the claimed subject-matter from the teaching of D2, it would therefore be necessary to select the preferred pea protein and at the same time rule out the preferred pH adjustment step before the heating step. The claimed combinations of temperature and time would also have to be selected from those described in D2. Since D2 does not directly and unambiguously disclose this combination of features, the claimed method is novel over D2.

4.16 For these reasons, the method defined in claim 1 and in dependent claims 2 to 9, which are more limited in scope, is novel over the teaching of D1 and D2.

4.17 During the oral proceedings, referring to decision G 2/10 (Reasons, point 4.6), the opponent submitted that the concept of disclosure had to be applied coherently when dealing with the issues of Article 123(2) EPC and novelty under Articles 54 in view of D2. In its opinion, claim 1 could not fulfil both requirements when this approach was applied coherently.

4.18 The board does not agree. The fact that, when starting from D2, a feature described as preferred has to be combined with a non-preferred one to arrive at the subject-matter of claim 1 renders the disclosure in D2 substantially different from that in the application for the opposed patent as filed (see 2.1 to 2.6 above). Hence, in the specifics of the case, the claimed subject-matter fulfils both the requirements of novelty under Article 54 EPC in view of D2 and Article 123(2) EPC when coherently applying the concept of disclosure developed in the case law of the EPO.

Claim 10

4.19 Claim 10 defines a pea protein extract obtainable by the method of claims 1 to 9. Opponent 2 argued that the pea protein of this claim lacked novelty over D1 to D11, D20 and D23.

4.20 As discussed above, the method of claim 1 is characterised by a step in which a precipitated pea protein contained in a slurry having a pH of 4.0 to 5.8 is subjected to a specific heat treatment. As shown in

Tables 2 and 3 of Example 2 and in Tables 7, 8 and 9 of Example 3 of the opposed patent, pea protein extracts subjected to this step have a significantly lower nitrogen solubility index, gel strength and viscosity than those which are heated at a different pH or are kept at the claimed pH but are not subjected to the claimed heating step. What is more, Examples 4 and 5 show that protein extracts obtained by the claimed method, which have these physicochemical properties, have better wine-fining and baking properties. For example, they allow a reduction of the water content in the dough used to prepare biscuits, while preserving or even improving sensory properties (compare extracts E and F).

4.21 During the oral proceedings, opponent 2 noted that the claimed heating step encompassed broad ranges of temperatures and heating times and that the heating step in the tests in Examples 2 and 3 was carried out at only one temperature and for the same time. In its opinion, these examples were not sufficient to make it credible that all methods encompassed by the broadly drafted claim 1 could result in products differing from those of the prior art.

4.22 This argument is not convincing. In the first place, there is no evidence for this allegation. Furthermore, as countered by the proprietor during the oral proceedings, Example 6 of the opposed patent provides additional evidence showing that the effects observed in Examples 2 and 3 were equally obtained by conducting heating steps at substantially different temperatures and using heating times falling within the claimed scope. What is more, as submitted by the proprietor, the experimental report D28 confirms that a product obtained by the claimed process differs from that

obtained by carrying out the heating step of D1. These results make it credible that subjecting a slurry containing precipitated pea protein at the claimed pH to the claimed heating step has a significant impact on the physicochemical properties of pea protein extracts. These results also make it credible that the pea protein extracts obtained by the claimed method differ from those not obtained by that method.

Novelty over D1 and D2

4.23 It has already been concluded that the method of claim 1 differs from those described in D1 and D2. For this reason, and considering what has been discussed above, it is credible that the pea protein extract of claim 10 differs from the pea protein extracts of D1 and D2, which have not been subjected to the claimed processing steps.

4.24 Consequently, the pea protein extract of claim 10 is novel over the teaching of D1 and D2.

Novelty over D3 to D11, D20 and D23.

4.25 It is uncontested that D3 to D11, D20 and D23 do not disclose the method of claim 1. However, the opposition division and opponent 2 were of the opinion that the product of claim 10 obtained by the process of claim 1 was not novel over the teaching of these documents, based on the following assumptions:

- first, D3 to D11, D20 and D23 disclosed pea protein compositions having the same nitrogen solubility index as defined in claim 11 as granted

- second, if these compositions had the nitrogen solubility index specified in claim 11, they were necessarily obtainable by the process of claim 1 and fell within the scope of claim 10

4.26 This logic is not convincing because there is no evidence that compositions having the nitrogen solubility index set out in claim 11 necessarily have the structure and the physicochemical properties, such as gel strength and viscosity, of a product obtainable by the process of claim 1.

4.27 As discussed above, the heating step at the pH set out in claim 1 imparts special characteristics to the claimed pea product extract. These characteristics extend beyond the observed nitrogen solubility index. The obtained protein compositions have both a lower solubility and gel strength than those which have not been subjected to this step. Furthermore, they have a low viscosity. Their properties when used in wine-fining and baking applications are also different.

4.28 In its letter dated 15 May 2025, relying on D38 and D39 filed with that letter, opponent 2 submitted for the first time that gel strength and viscosity were directly linked to solubility. Opponent 2 also argued that protein solubility also influenced protein functionality in food applications. Thus, in its opinion, if a protein extract had a low nitrogen solubility index, it could be expected to have a low gel strength and viscosity as well. It also believed that all effects observed in the tests in the patent were simply due to a reduced protein solubility.

4.29 The proprietor requested that D38 and D39 and all submissions relying on these documents not be admitted

into the appeal under Article 13(2) RPBA. The board considers that this request should be acceded to. From the outset of the appeal proceedings, in its statement setting out the grounds of appeal, the proprietor argued that the protein extract of claim 10 differed from those of the prior art, not only in the lower solubility, but also in a lower gel strength and viscosity. Furthermore, it drew attention to the different effects observed in bakery and wine-fining applications (see pages 14 to 16 of that statement).

4.30 There was no reason to wait until one week before the oral proceedings before the board to file new documents and to set out new reasons to rebut the proprietor's assertions. Furthermore, opponent 2's contention that a decrease of protein solubility correlates inevitably with a decrease in gel strength, viscosity and with the other effects described in the patent raises new complex technical issues at a very late stage of the appeal proceedings. No exceptional reasons can be recognised, which have been justified with cogent reasons, for opponent 2 to amend its case at a very late stage of the appeal proceedings. Thus, D38 and D39 and the submissions made relying on these documents are not admitted.

4.31 There is further no evidence that the pea protein extracts disclosed in the prior-art documents D3 to D11, D20 and D23:

- were prepared by a method involving heating a slurry comprising precipitated pea protein having the claimed pH at the claimed heating conditions

- have the same properties - in particular in terms of nitrogen solubility index, gel strength and

viscosity - as the extracts obtained carrying out the method of claim 1

4.32 For example, D3 discloses a commercial pea product extract, Propulse®, which, according to opponent 2, has the nitrogen solubility index specified in claim 11 as granted. However, there is neither evidence that Propulse® was prepared by carrying out the heating step of claim 1 nor evidence that, beyond the allegedly low nitrogen solubility index, it has a low gel strength and viscosity, like the products obtained by the method of claim 1. Thus, D3 does not directly and unambiguously disclose the product of claim 10.

4.33 The same considerations apply to D4 to D11, D20 and D23. Opponent 2 drew attention to the pea protein extracts disclosed in these documents, which allegedly had a low nitrogen solubility index. However, like D3, these documents provide neither evidence that these extracts were prepared by the claimed method nor evidence that they had the properties observed in the products obtained by that method. Thus, these documents do not anticipate the subject-matter of claim 10.

4.34 Consequently, the pea protein extract of claim 10, and its use, defined in claim 11, are novel over the teachings of the cited prior-art documents.

4.35 In its letter dated 15 May 2025, opponent 2 argued that claim 10 had not only to be rejected on the ground of lack of novelty but also because its product-by-process format was, as such, not allowable.

4.36 Citing decision T 150/82 and section F-IV, 4.12 of the EPO Guidelines for Examination, opponent 2 submitted that the product-by-process format could only be used

"if it is IMPOSSIBLE to claim/define the product other than in terms of a process of manufacture". It argued that, assuming that the product obtainable by the method of claim 1 had low solubility, gel strength and viscosity, these parameters could and should have been used to define that product. Hence, the criteria for drafting a product-by-process claim were not fulfilled, and claim 10 should not allowed.

4.37 The board does not agree with these conclusions. The mere fact that claim 10 is drafted as a product-by-process, despite the fact that the claimed product could be satisfactorily defined by reference to its composition, structure or other testable parameter, is not a ground for opposition set out in Article 100 EPC. The issue could be, at most, one of a lack of clarity. Section F-IV, 4.12 of the EPO Guidelines for Examination mentioned by opponent 2 relate indeed to the requirement of clarity. Furthermore, decision T 150/82, cited by opponent 2, relates to an appeal against the refusal of a patent application and not to an appeal concerning an opposition filed against a granted patent. Consequently, as far as opponent 2's objection is concerned, this decision is not applicable.

4.38 For these reasons, considering that claim 10 is a granted claim, its format cannot be objected to on the ground that it is drafted in the product-by-process format or that it lacks clarity (G 3/14).

5. *Inventive step (claims 1 and 10)*

5.1 The opposition division considered that the claimed subject-matter involved an inventive step over D12, which was considered the closest prior art.

5.2 Opponent 2 contested the opposition division's finding. During the oral proceedings, it raised objections starting in the first place from D2 as the closest prior art. Alternatively, it considered D12 the closest prior art. In the written proceedings, it raised further objections considering D7 and D14 as alternative starting points.

The underlying invention and the closest prior art

5.3 The claimed invention relates to a method for extracting pea proteins and to protein extracts obtainable from this method. As explained in paragraphs [0004] and [0005] of the patent, the methods used for extracting and isolating proteins can have a substantial impact on the physicochemical and functional properties of protein extracts, e.g. their solubility, viscosity and emulsifying capacity. Obtaining extracts having the desired properties is cumbersome. The claimed method includes specific isolation and heating steps. As explained in paragraphs [0022] and [0023] of the patent, protein extracts subjected to these steps have lower solubility, viscosity and gel strength than those which do not undergo these steps. Moreover, they have superior properties when used in processes for manufacturing bakery products and beverages (see paragraphs [0025] and [0026]).

5.4 Reading the patent, it is clear that the purpose of the invention is, in the first place, the provision of a pea protein composition comprising pea proteins having a low solubility. Hence, as argued by the opposition division and the proprietor, a document aimed at

providing highly soluble proteins cannot be the closest prior art.

5.5 Opponent 2 argued that as solubility was a relative property, it should not be taken into account for selecting the closest prior art. This argument is not convincing. From the patent and the documents used for formulating the inventive-step attacks (e.g. D2, D12 and D14), it is evident that before the relevant date, the skilled person distinguished pea proteins having a "high" versus a "low" solubility. Thus, even in the absence of precise thresholds, the skilled person distinguished these protein forms.

5.6 The board agrees with the proprietor that D2 does not represent the closest prior art. D2 aims to enhance the solubility of plant proteins and obtain proteins having a high solubility (see paragraphs [0001], [0009], [0011], [0020], [0021] and [0031] and claims 18, 27 and 32). Thus, D2 is not a suitable starting point and does not represent the closest prior art for discussing inventive step.

5.7 D12 discloses a method for extracting legume proteins, pea proteins in particular. The method focuses on isolating these proteins and on separating them from carbohydrates rather than, as in D2, on obtaining highly soluble proteins. The method includes the preparation of an aqueous composition obtained from a legume at a pH of preferably from 2.2 to about 3.2, centrifugation to sediment insoluble carbohydrates followed by adjustment of the pH to 4.4 to 4.6 to induce isoelectric precipitation of the proteins (see column 1, lines 35 to 48; column 4, lines 10 to 13; Example 1; and the claims of D12).

5.8 The board agrees with the proprietor that, as established by the opposition division, D12 is a suitable starting point and can be considered the closest prior art for assessing inventive step.

Distinguishing features

5.9 Opponent 2 referred to the method for preparing the pea protein extract described in column 6, lines 47 to 56 of D12 as a suitable starting point. This method involves the preparation of a slurry (Fraction 6) involving isoelectric precipitation of the protein at a pH of 4.5, separation by centrifugation to provide a cake whose pH is adjusted within a range of 4.5 to 7.5, and spray drying of the cake to obtain the final pea protein product.

5.10 It was not disputed that the method of claim 1 differs from that of D12 in that the aqueous slurry obtained by protein precipitation is subjected to the heating step defined in claim 1. Since the method of D12 does not include the claimed heating step, for the reasons set out above, the products of claim 10 are considered to differ, in terms of physicochemical properties, from those of D12.

Technical effect

5.11 As concluded above when discussing the novelty of claim 10, the tests in the patent provide convincing evidence that by subjecting a slurry containing the isolated pea protein to a heating step at the claimed pH and the heating conditions, the solubility, gel strength and viscosity of the obtained protein extracts are reduced. The tests also show that these extracts have superior

properties when used in processes for manufacturing bakery products and beverages.

5.12 Relying on the submission in opponent 1's statement of grounds of appeal, opponent 2 argued that the experimental report D30 provided evidence that the alleged effects could not be achieved across the entire scope claimed. D30 showed that a pea protein extract heated at 140°C for 4 seconds at a pH of 4.5 did not have a nitrogen solubility index of less than 15% and that one heated at 163°C for 4 seconds agglomerated, blocking the equipment. A nitrogen solubility index of less than 15%, which was desired, was thus not achieved across the entire scope claimed.

5.13 The board agrees with the proprietor that the allegation of facts based on D30 was set out for the first time in opponent 1's statement of grounds of appeal and should not be admitted into the appeal proceedings.

5.14 D30 was filed late during the opposition proceedings (by letter of 2 December 2022) as part of a novelty attack to show the impact of a heat treatment on the colour of protein extracts. The relevance of D30 was not further discussed during the opposition proceedings. It was brought forward neither during the oral proceedings nor in the decision under appeal. It was only in appeal that opponent 1 referred again to D30, and in this case this document was relied on for an inventive-step attack to allege that the relevant effects were not achieved across the entire scope claimed.

5.15 Furthermore, as noted by the proprietor, D30 does not indicate the pH at which the nitrogen solubility index

was measured in experiment 1. As shown in Table 3 of the patent, the nitrogen solubility index changes considerably depending on the pH. Thus, experiment 1 has no probative value. Concerning experiment 2, as noted by the proprietor, the fact that the protein "agglomerated and blocked" the equipment is not an indication that it did not have a low solubility index either. Thus, opponent 1's new allegation of facts based on D30 is not only late filed but also raises new complex issues which should have been addressed during the opposition proceedings. Accordingly, the board does not admit the submissions based on D30 into the appeal proceedings (Article 12(4) and (6) RPBA).

Underlying technical problem

5.16 Opponent 2 considered that the underlying technical problem was merely the provision of an alternative method for extracting pea proteins and an alternative pea protein extract.

5.17 The board does not agree. Starting from D12 and taking into account the effects shown in the patent mentioned above, the underlying technical problem is the provision of a pea protein extract and a method for its manufacture, where the extract has a combination of a lower nitrogen solubility index, gel strength and viscosity, this resulting in improvements in processes for manufacturing bakery products and beverages.

Non-obviousness of the claimed solution

5.18 Opponent 2 argued that the claimed method and the product obtainable by this method did not involve an inventive step over D12, considered alone or in combination with D13. D13 taught that heating caused

protein precipitation and decreased its solubility. Thus, for the skilled person confronted with the underlying problem, it would have been obvious to include a heating step, such as that of D13, in the method described in D12. Consequently, that person would have carried out the claimed method and obtained the claimed pea protein extract without the need of inventive skills.

5.19 Referring to opponent 1's submissions and to the experimental report D15, opponent 2 also argued that the selection of the cut-off values 4.0 and 5.8 defining the claimed pH range was arbitrary and could thus not involve an inventive step. D15 showed that the preferred low nitrogen solubility index of less than 15% mentioned in claim 11 as granted was obtained not only when the pH was inside, but also when it was outside the claimed pH range, e.g. at a pH of 6.2. For this reason alone, the claimed subject-matter was obvious over the teaching of D12.

5.20 This argument fails to convince. As noted by the proprietor, Table 2 of D15 shows that all protein extracts heated at a pH of 6.2, i.e. above the claimed range, have a higher nitrogen solubility index than those heated at a pH within the claimed range. The results show a clear pattern indicating the advantage of working within rather than outside the claimed pH range.

5.21 For claim 1 to be inventive, it is not necessary to achieve a nitrogen solubility index lower than 15%. This is not an absolute threshold required for the method to be inventive. What is relevant is that the nitrogen solubility index obtained by carrying out the heating step at a pH within the claimed range is lower

than that obtained at pHs outside that range. It is also relevant that this result makes it credible that the combination of the claimed pH range and heating conditions results in a protein extract having a lower nitrogen solubility index than that of the prior art.

5.22 Therefore, as argued by the proprietor, the upper limit of a pH of 5.8 well represents a limit at which a desired decrease in the nitrogen solubility index can be obtained. The results in D15 actually confirm those in the patent, where the properties of an extract obtained carrying out a heating step at a pH within the claimed range was compared with those of one which was heated at a pH of 7.5, above the claimed range.

5.23 Similar considerations apply to the lower pH limit of 4.0 specified in claim 1. As shown in the proprietor's test report D29, when the heating step is carried out at a pH of 3.8, lower than the claimed one, the viscosity and the gel strength are higher than those observed in the tests of the patent, where the extract is heated at a pH within the claimed range. As discussed above, lower viscosity and gel strength characterise the claimed pea protein extracts, which have also improved properties in food manufacturing methods.

5.24 The fact that the cut-off values 4.0 and 5.8 of the claimed pH range might exclude lower or higher pH values suitable for achieving advantageous effects is not, as such, a reason to consider the selection of the claimed cut-off values "arbitrary" and the claimed subject-matter obvious in view of the prior art. It would be illogical if a claim defining a feature by reference to a range be considered to lack an inventive step for the sole reason that the invention could have

been claimed more broadly, specifying a broader range. This would lead to the absurd situation that a claim defining a broad range involves an inventive step, whereas a claim defining a narrower range, falling within that broad range, does not.

5.25 What counts is that the available evidence makes it credible that subjecting a slurry containing precipitated pea protein at a pH within the claimed range to the claimed heating step induces effects which go beyond those obtainable by carrying out the method of the prior art. Also, there is evidence that both the claimed heating and the pH are relevant for inducing that effect.

5.26 Since D12 does not suggest to the skilled person confronted with the underlying problem to select the pH and temperatures specified in claim 1, the claimed subject-matter is not rendered obvious by the teaching of this document.

5.27 The board considers also that, starting from D12 and confronted with the underlying problem, the skilled person would not have found in D13 any prompt to modify the method of D12 and to heat a slurry containing pea protein at the conditions defined in claim 1.

5.28 There are several reasons why the skilled person would not have referred to D13 and relied on its teaching to solve the underlying problem. D13 discloses a method for regulating the solubility of proteins extracted from oilseeds, especially soybean. The method includes precipitation of soybean protein by isoelectric precipitation to form a curd which is then subjected to a heating step. D13 mentions, *inter alia*, that heat induces denaturation of certain proteins and decreases

their solubility. However, D13 does not even mention pea proteins. Although pea and soybean are both legumes, they are substantially different seeds, containing different proteins.

5.29 Moreover, whereas the patent aims to produce proteins having low solubility, D13 aims to produce proteins having an intermediate solubility, i.e. between a low and a high solubility. The protein solubility index of the protein extracts of D13 is between 25 and 75% (page 3, line 8), thus considerably higher than that obtained by carrying out the claimed invention, which is preferably less than 15%. D13 actually teaches that if a protein is only available in insoluble form, it can be produced in a more soluble form to have a protein solubility index of between 25 and 75% (page 1, line 31 to page 2, line 17 and page 3, lines 4 to 9).

5.30 Furthermore, D13 specifies heating the curd at a pH within 5.5 to 7, which is largely outside the range of claim 1. What is more, this pH range is far from the isoelectric pH of soy protein (around 4.5, see Figure 3 of D21), the preferred protein of D13. The method of D13 is thus conceptually different from that in the opposed patent. In fact, claim 1 specifies a pH of from 4.5 to 5.8, which practically overlaps with the isoelectric point of pea proteins, which is between 4 and 6 (D25, page 26, third paragraph and D3, Figure 3). D13 also does not suggest any of the heating temperature/time combinations specified in claim 1. Also, D13 teaches that to produce a protein having low solubility, 20% wt% calcium hydroxide should be added. Hence, D13 hints at adding this salt, rather than at changing the temperature and duration of the heating step.

5.31 Finally, D13 aims to regulate protein solubility but does not mention the other relevant properties, gel strength and viscosity, let alone any effect in food manufacturing processes. Thus, the skilled person would not have referred to D13 when confronted with the underlying technical problem.

5.32 For these reasons, the method of claim 1 involves an inventive step over D12, alone or combined with D13. Since the product of claim 10, which is obtainable by that method, is characterised by a structure and properties induced specifically by that method, the subject-matter of claim 10 also involves an inventive step.

Starting from other cited prior-art documents

5.33 As mentioned above, D2 does not represent the closest prior art and is not a suitable starting point for assessing inventive step because it focuses on the production of proteins having high solubility, this being in contrast to the opposed patent, which focuses on low solubility. Even if D2 were taken into account as a starting point, for the reasons set out when starting from D12, the same conclusions would apply. Moreover, since D2 focuses on the preparation of highly soluble proteins, the skilled person would have had even less incentive or motivation to modify the process disclosed there to prepare a pea protein extract according to the invention.

5.34 In the written proceedings, opponent 2 set out some additional inventive-step objections considering D7 and D14 as alternative starting points. The board considers that the conclusions on inventive step drawn starting

from D12 as the closest prior art would not be different starting from D7 or D14.

5.35 D7 discloses a method for producing pea protein isolates involving preparation of an aqueous pea protein composition, isolation of the protein by isoelectric precipitation at pH 4.5, centrifugation, dispersion at pH 9, isoelectric re-precipitation at pH 4.5, followed by centrifugation, washing and drying the precipitate. Drying is carried out by lyophilisation, spray drying or tumble drying (page 364, Figure 1 "combined extracts" and page 365, left-hand column "Pilot plant trials").

5.36 Opponent 2 drew attention to the tumble-drying step, which involves heating and results in a protein having a low solubility. It acknowledged that D7 did not disclose the heating step of claim 1. However, it argued that, confronted with the problem of providing an alternative method to produce a protein extract having a low solubility, the skilled person would have tested alternative combinations of heating temperature and time and would have arrived at the claimed solution without an inventive step.

5.37 The board does not agree. In the first place, the problem is not the mere provision of an alternative, but is the problem formulated above, starting from D12. Furthermore, D7 does not provide any other information on the properties of the obtained protein, beyond its solubility. Thus, it does not hint at the claimed solution. Moreover, it is clear from D7 that the final step, involving heating, is a drying step. This differs substantially from the claimed heating step, which is carried out for its entire duration on a slurry and does not result in a dried product. This means that

even if, starting from D12, the problem were formulated as the provision of an alternative method, the skilled person would, at most, have provided an alternative drying step. They would not have carried out an additional step involving heating the slurry, which does not result in a dry product. D13 does not suggest the claimed solution either for the reasons already provided when starting from D12.

5.38 The same conclusions is arrived at when starting from D14 as the closest prior art. The teaching of D14 does not go beyond that of D12 and D7. D14 discloses a method for extracting proteins from low-fat seeds involving soaking the seeds in water, extraction in acid or alkaline water and isoelectric precipitation of the proteins to obtain a curd which is then spray dried. Like D12 and D7, D14 does not disclose a heating step of a slurry as defined in claim 1. Furthermore, D14 does not even mention the preparation of proteins having low solubility, gel strength and viscosity, let alone the use of the proteins for the relevant uses described in the patent. Thus, neither alone nor in combination with D13 would D14 have provided a prompt toward the claimed solution.

5.39 For these reasons, the method of claim 1, as well as the protein extract of claim 10 produced by such a method, involves an inventive step over the cited prior-art documents. The same applies to the dependent claims, which are more limited in scope.

6. *Adaptation of the description*

6.1 The proprietor filed an amended description adapted to the set of claims of auxiliary request 1. No objections were raised against the amendment, and the board does

not see any reason for raising any objection on its own motion.

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 a patent as amended in the following version:

- Description: paragraphs 1 to 280 filed by email during the oral proceedings before the board

- Claims: 1 to 11 of the auxiliary request 1 filed with the letter of 21 March 2025

- Figures: 1 to 20 of the patent specification

The Registrar: The Chairman:

K. Götz-Wein A. Haderlein

Decision electronically authenticated