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**Datasheet for the decision
of 23 April 2025**

Case Number: T 0140 / 23 - 3.3.02

Application Number: 18152812.6

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A23L3/12, B02C13/00, A23K10/24,
A23J3/12

Language of the proceedings: EN

Title of invention:

IMPROVED METHOD FOR PRODUCING BLOOD MEAL

Patent Proprietor:

Tessenderlo Group NV

Opponents:

SiccaDania A/S
SANTARELLI-Société de Conseils en Propriété
G. Larsson Starch Technology AB

Headword:

Relevant legal provisions:

EPC Art. 56

Keyword:

Inventive step

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0140/23 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 23 April 2025

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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted on 25 November 2022 concerning maintenance of the European Patent No. 3459356 in amended form.**

Composition of the Board:

Chairman M. Maremonti
Members: S. Bertrand
M. Blasi

Summary of Facts and Submissions

- I. The appeals by opponent 3 ("appellant I") and opponent 4 ("appellant II") are against the opposition division's interlocutory decision, according to which European patent No. 3 459 356 ("the patent") as amended in the form of the main request, the claims of which were filed on 5 August 2022, and the invention to which it relates meet the requirements of the EPC.
- II. The patent is concerned with providing a method for producing blood meal, a blood meal and uses of the blood meal in feed. Blood meal is a dry, inert powder made from blood, used as, *inter alia*, a high-protein animal feed.
- III. The following documents were submitted before the opposition division and are relied upon in the present decision:

D8 EP 3 192 377 A1
D16 Sally L Noll et al., "Available Lysine Content of Blood Meals Determined by Turkey Bioassay and Fluoronitrobenzene Assay" 1984, Poultry Science, 63, pages 144-52

- IV. In the impugned decision, the opposition division's conclusions included that the subject-matter of the claims of the main request involved an inventive step starting from D16 as the closest prior art.
- V. In their statements of grounds of appeal, appellants I and II contested the opposition division's decision with regard to, *inter alia*, the inventive step of the

subject-matter of the claims of the main request. Appellant I relied on D16 as a starting point for the assessment of the inventive step of the claimed subject-matter.

- VI. In the reply to the statements of grounds of appeal, the patent proprietor ("respondent") contested the appellants' submissions. It also submitted sets of claims of auxiliary requests 1 to 11.
- VII. In a further letter, appellant II provided further submissions with regard to the inventive step of the subject-matter of the claims of the main request.
- VIII. The board summoned the parties to oral proceedings as per their requests and issued a communication under Article 15(1) RPBA.
- IX. In a subsequent letter, the respondent provided further arguments in support of, *inter alia*, the inventive step of the claimed subject-matter.
- X. In a further letter, appellant I provided further submissions regarding, *inter alia*, the inventive step of the subject-matter of the claims of the main request and the auxiliary requests.
- XI. In a further letter, appellant II provided further submissions regarding, *inter alia*, the inventive step of the subject-matter of the claims of the main request.
- XII. Oral proceedings before the board were held by videoconference on 23 April 2025 in the presence of the appellants and the respondent. The proceedings were continued in the absence of opponent 2, in accordance with Rule 115(2) EPC and Article 15(3) RPBA.

XIII. The parties' requests, relevant to this decision, were as follows.

- Appellants I and II requested that the decision under appeal be set aside and that the patent be revoked in its entirety.
- The respondent requested:
 - that the appeals be dismissed, implying that the patent be maintained in amended form in the version considered allowable by the opposition division (main request), or alternatively,
 - that the patent be maintained in amended form on the basis of one of the sets of claims of auxiliary requests 1 to 11 filed with the reply to the grounds of appeal.
 - Opponent 2, party as of right to these proceedings, did not file any submissions or submit any requests in the appeal proceedings.

XIV. The parties' submissions that are relevant to the decision are referred to in the reasons for the decision below.

Reasons for the Decision

Main request

1. Inventive step - claim 1 - Article 56 EPC

1.1 Claim 1 of the main request reads as follows:

"1. Method for producing blood meal comprising the subsequent steps of (i) providing an aqueous mixture comprising raw blood, preferably having a solid content

of between 5 and 18 wt% and (ii) increasing the solid content of the mixture to obtain a mixture having a solid content of 20 wt% or higher, preferably between 20-80 wt% and (iii) concurrently drying and grinding the resultant mixture in an air turbulence mill, to obtain blood meal having an average particle size (d50) between 20 μ m and 0.7 mm, a d90 of below 1 mm as measured with laser diffraction using a dry powder Beckman Coulter particle size analyzer, and an ileal digestibility as measured according to the method described by Boison [sic] in *Animal Feed Science Technology*, 51, pp.29-43 (1995) and in *Livestock Science*, 309 : pp.182-185 (2007), of 85% or higher preferably of 87% or higher, and more preferably 90% or higher, wherein the air turbulence mill comprises a chamber with appropriate inlets and outlets for product and stream(s) of gas in which a rotating member is mounted with stacks of impacting devices which rotating member can rotate at high speed, wherein the rotating member rotates at a tip speed between 35-250 m/s."

The aim of the invention as defined in claim 1 of the main request is in particular to produce blood meal with high protein digestibility (paragraphs [0009] to [0011] of the patent).

1.2 Appellant I raised an objection of lack of inventive step against the subject-matter of claim 1 of the main request starting from D16 as the closest prior art in combination with, *inter alia*, D8.

1.3 Starting from D16

D16 discloses the analysis of various blood meals obtained by different drying processes and compares the total lysine content, the chemically available lysine content (using the fluorodinitrobenzene technique

("FDNB-lysine")) and the biologically available lysine content (table 3 on page 148 of D16).

The fluorodinitrobenzene technique is an *in vitro* method for determining the digestibility of a blood meal sample, as submitted by the respondent.

The FDNB-lysine content is correlated with the digestibility of the blood meal. A higher FDNB-lysine content represents higher digestibility.

Appellant I relied, *inter alia*, on the production of blood meal by a process using a spray dryer ("Spray", third entry in the first column of table 3 of D16) as the starting point in D16 for assessing inventive step.

The respondent did not dispute that the process using a spray dryer could be used as a starting point for assessing the inventive step of the subject-matter of claim 1 of the main request. In fact, as noted by appellant I, the patent states in paragraph [0009] that "[s]pray dried material is currently the bench mark of high quality blood meal".

1.4 Distinguishing features

It was common ground between appellant I and the respondent that the distinguishing features of claim 1 of the main request are:

- (i) concurrently drying and grinding the mixture in an air turbulence mill ("ATM"), wherein the ATM has a rotating member as claimed which rotates at a tip speed between 35-250 m/s, and
- (ii) obtaining blood meal having a d₅₀ between 20 µm and 0.7 mm, a d₉₀ of below 1 mm and a Boisen ileal digestibility of 85% or higher

1.5 Objective technical problem

The parties relied on the table on pages 11 and 12 of the application as filed (reference is made here to the application as published).

This table provides a comparison of a blood meal obtained using an ATM dryer (according to claim 1 of the main request) with blood meals obtained using conventional dryers (disc, ring and spray dryers, all comparative).

It was common ground that the spray dryer in said table was representative of the disclosure of D16.

In said table, the Boisen ileal digestibility of a blood meal obtained using an ATM dryer (according to claim 1 of the main request) is 90.2 to 93.7. The Boisen ileal digestibility of a blood meal obtained using a spray dryer (representative of D16) is either 97.0 ("pilot test") or 85.7-89.5 ("commercial").

It was also common ground between appellant I and the respondent that the technical effect arising from the distinguishing features was an ileal digestibility comparable with that obtained using a spray dryer.

As submitted by appellant I and the respondent, the objective technical problem is thus to provide a process for producing blood meal having the same high ileal digestibility.

1.6 Obviousness

1.6.1 As submitted by appellant I, D8 teaches (paragraphs [0008] to [0010]) the use of an ATM dryer for producing a meal rich in animal proteins with high digestibility. More specifically, D8 relates to a method for producing partly hydrolysed keratinaceous material, such as

feather meal or meal from hair (paragraph [0001] of D8). This hydrolysed keratinaceous material is used as animal feed (claim 15 and paragraph [0019] of D8).

Paragraphs [0041] to [0043] of D8 teach that the high *in vitro* digestibility and material characteristics of the keratinaceous material (meal) are obtained by using an ATM dryer as defined in claim 1 of the main request, such that the reduction in the digestibility of the keratinaceous material is limited and the resulting meal is characterised by a pepsin and/or ileal digestibility remaining higher than preferably 85% or higher, more preferably about 90% or higher. The ileal digestibility is measured by the method described by Boisen as required by claim 1 of the main request (paragraph [0090] of D8).

Paragraphs [0075] and [0076] of D8 disclose that the meal as obtained by using an ATM dryer has an average particle size (d50) between 20 μm and 0.7 mm and a d90 of below 1 mm, i.e. the same d50 and d90 as required by claim 1 of the main request.

The ATM dryer has the benefit of concurrently drying and grinding (paragraph [0042] of D8). Furthermore, paragraph [0052] of D8 teaches a tip speed of generally 50 m/s or lower, i.e. a range overlapping with the tip speed range (35-250 m/s) required by claim 1 of the main request.

It was not disputed by the respondent that the ATM used under the conditions disclosed in D8 corresponds to the ATM required by claim 1 of the main request.

Thus, by following the teaching of D8, the skilled person would have replaced the spray dryer known from D16 with the ATM dryer disclosed in D8 and would have applied the conditions disclosed in D8 (concurrently

drying and grinding the mixture in the ATM using a tip speed of 50 m/s or lower). The skilled person would have thereby obtained a blood meal having a d₅₀ between 20 µm and 0.7 mm, a d₉₀ of below 1 mm and a Boisen ileal digestibility of 85% or higher, as required by claim 1 of the main request. Consequently, the skilled person would have arrived at the subject-matter of claim 1 of the main request. The claimed subject-matter was thus obvious to the skilled person.

1.6.2 This conclusion was disputed by the respondent.

The respondent first submitted that D8 disclosed the use of an ATM dryer to improve the digestibility of a hydrolysed keratinaceous material (exemplifying feather meal). However, D8 did not teach or suggest that an ATM dryer would make it possible to obtain blood meal having the required Boisen ileal digestibility. The skilled person would not have consulted D8. Concluding that the skilled person would have consulted D8 was based on hindsight.

The board does not agree. As submitted by appellant I, the skilled person faced with the objective technical problem as set out above would have consulted the state of the art dealing with the drying of meals rich in proteins, in particular animal proteins, or even the state of the art dealing with the drying of meals containing heat-sensitive products suitable as animal feeds. Since, as set out above, D8 relates to a process for producing a meal rich in animal proteins having high digestibility and suitable as animal feeds, the skilled person would have consulted D8. Moreover, D8 (paragraphs [0021] to [0025]) teaches that blood, particularly coagulated blood, may be used in combination with the keratinaceous material, with blood

amounts up to 50 wt%. This is further motivation for the skilled person to consult D8.

The respondent also submitted that D8 provided information relating to the digestibility of the final feather meal product only, not of the portion of blood material which could be intermixed with the feather material. No example was provided in D8 where a blood fraction was (co-)dried along with the keratinaceous material. Drying feather meal and blood meal was not comparable, due to different protein content and fat content. Moreover, it was known that feather meals generally had a higher ileal digestibility than blood meals. For these reasons, D8 did not provide any teaching or suggestion that using an ATM dryer would result in a blood meal with high digestibility.

The board disagrees. It is established case law that it is not necessary to establish with certainty that the success of an envisaged solution of a technical problem was predictable. To render a solution obvious it is sufficient to establish that the skilled person would have followed the teaching of the prior art with a reasonable expectation of success.

As submitted by appellant I, the skilled person might not have been able to predict the exact results in view of the difference between feather meal and blood meal, but they would have reasonably expected success in obtaining the required high ileal digestibility when producing a blood meal using an ATM dryer, in view of the above-mentioned teaching contained in D8.

- 1.7 In view of the above, the board concludes that the subject-matter of claim 1 of the main request does not involve an inventive step starting from D16 in combination with D8 (Article 56 EPC).

2. The main request is not allowable.

Auxiliary request 4

3. Inventive step - claim 1 - Article 56 EPC

3.1 Claim 1 of auxiliary request 4 differs from claim 1 of the main request on account of the lower limit of the tip speed, which is defined as being 50-250 m/s (35-250 m/s in claim 1 of the main request).

3.2 The distinguishing features of claim 1 of auxiliary request 4 in view of D16 are therefore:

(i) concurrently drying and grinding the mixture in an air turbulence mill ("ATM"), wherein the ATM has a rotating member as claimed which rotates at a tip speed between 50-250 m/s, and

(ii) obtaining blood meal having a d50 between 20 μm and 0.7 mm, a d90 of below 1 mm and a Boisen ileal digestibility of 85% or higher

3.3 The respondent submitted that the technical effect and the objective technical problem remained the same as for the main request, arguing that paragraph [0052] of document D8 pointed to a tip speed different from that of claim 1 of auxiliary request 4 (a tip speed between 50-250 m/s). Therefore, the skilled person would not have chosen the tip speed as claimed.

3.4 The board does not agree.

As submitted by appellant I, no technical effect is associated with the tip speed required by claim 1 of auxiliary request 4. In the absence of a technical effect associated with the tip speed required by claim 1 of auxiliary request 4, the range required by claim 1

of auxiliary request 4 is arbitrary and, for this reason alone, cannot contribute to inventive step.

For the sake of completeness, paragraph [0052] of D8 discloses that "[t]he rotor generally rotates with a tip speed of about 10 m/s or higher, more preferably of about 15 m/s or higher, even more preferably of about 20 m/s or higher. Generally, the speed is about 50 m/s or lower, preferably about 30 m/s or lower". Thus paragraph [0052] of D8 at least discloses a tip speed of 50 m/s, i.e. the lower limit of the range required by claim 1 of auxiliary request 4 (50-250 m/s).

Furthermore, by using the term "generally", paragraph [0052] does not necessarily limit the tip speed to a value of 50 m/s or lower. Therefore, contrary to the respondent's submission, there is no teaching in D8 dissuading the skilled person from selecting a tip speed of 50 m/s or higher as required by claim 1 of auxiliary request 4.

The board concludes that the subject-matter of claim 1 of auxiliary request 4 does not involve an inventive step starting from D16 in combination with D8 (Article 56 EPC).

4. Auxiliary request 4 is not allowable.

Auxiliary requests 1 to 3 and 5 to 11

5. Inventive step - claim 1 - Article 56 EPC

5.1 Claim 1 of auxiliary requests 1 to 3 and 5 to 11 was amended as follows in comparison with claim 1 of the main request.

- Claim 1 of auxiliary request 1 includes the limitation of claim 9 of the main request, i.e. it is specified that the air turbulence mill is

operated with a flow of gas, preferably air with optionally a lowered oxygen content, at a temperature between 20°C and 500°C, preferably between 20°C and 450°C and wherein the gas flow is between 5 and 50 m³/hr per kg feed, which flow may be adjusted to influence the particle size of the dry blood meal, and wherein the residence time is less than 10 sec.

- Claim 1 of auxiliary request 2 includes the mandatory limitation of claim 6 of the main request, i.e. it is specified that concurrent drying and grinding is performed at a temperature such that the material being dried and ground remains at a temperature of 90°C or below.
- Claim 1 of auxiliary request 3 is a combination of claim 1 of each of auxiliary requests 1 and 2.
- Claim 1 of auxiliary request 5 is a combination of claim 1 of each of auxiliary requests 1 and 4.
- Claim 1 of auxiliary request 6 is a combination of claim 1 of each of auxiliary requests 2 and 4.
- Claim 1 of auxiliary request 7 is a combination of claim 1 of each of auxiliary requests 3 and 4.
- Claim 1 of auxiliary request 8 differs from claim 1 of the main request on account of the lower limit of the tip speed, which is defined as being 80-250 m/s (35-250 m/s in claim 1 of the main request).
- Claim 1 of auxiliary request 9 is a combination of claim 1 of each of auxiliary requests 1 and 8.
- Claim 1 of auxiliary request 10 is a combination of claim 1 of each of auxiliary requests 2 and 8.

- Claim 1 of auxiliary request 11 is a combination of claim 1 of each of auxiliary requests 3 and 8.

5.2 During the oral proceedings, after having announced that auxiliary request 4 was not allowable, the board stated that in its preliminary opinion, the same conclusion of lack of inventive step as that given for the main request and auxiliary request 4 seemed to apply to the subject-matter of claim 1 of each of auxiliary requests 1 to 3 and 5 to 11.

5.3 The respondent made no submissions at the oral proceedings before the board as to why the features added to claim 1 of each of auxiliary requests 1 to 3 and 5 to 11 provided a contribution to inventive step. In its written submissions, the respondent did not rely on any technical effect achieved by the additional technical features in claim 1 of each of auxiliary requests 1 to 3 and 5 to 11 either. In the absence of any such submissions from the respondent, the board concludes that the reasons of lack of inventive step given for the subject-matter of claim 1 of the main request and claim 1 of auxiliary request 4 apply *mutatis mutandis* to the subject-matter of claim 1 of each of auxiliary requests 1 to 3 and 5 to 11 (Article 56 EPC).

5.4 In addition, as submitted by the appellant I, the above-mentioned features added to claim 1 of auxiliary requests 1 to 3 and 5 to 11 are known from D8.

Paragraphs [0047], [0049] and [0057] of D8 disclose that the ATM is operated with a flow of gas at a temperature between 20°C and 500°C, at a gas flow between 5 and 50 m³/hr per kg feed and a residence time of less than 10 sec, and thus render the additional features of claim 1 of auxiliary request 1 obvious.

Claim 2 of D8 discloses that concurrent drying and grinding is performed at a temperature such that the material being dried and ground remains at a temperature of 90 °C or below. Thus claim 2 of D8 discloses the additional features of claim 1 of auxiliary request 2.

As set out above in the context of the assessment of the inventive step of the subject-matter of claim 1 of auxiliary request 4, a tip speed of 80-250 m/s as required by claim 1 of auxiliary request 8 is arbitrary and cannot contribute to inventive step for this reason alone. Furthermore, there is no teaching in D8 dissuading the skilled person from selecting a tip speed of 80 m/s or higher as required by claim 1 of auxiliary request 8.

It follows that the subject-matter of claim 1 of each of auxiliary requests 1, 2 and 8 does not involve an inventive step (Article 56 EPC).

Each of auxiliary requests 3, 5 to 7 and 9 to 11 is a combination of two higher-ranking auxiliary requests. Thus, for the reasons given for the higher-ranking auxiliary requests, claim 1 of each of auxiliary requests 3, 5 to 7 and 9 to 11 does not involve an inventive step (Article 56 EPC).

6. Consequently, auxiliary requests 1 to 3 and 5 to 11 are not allowable.
7. Since none of the respondent's claim requests is allowable, the patent is to be revoked.

Order

For these reasons it is decided that:

1. The appealed decision is set aside.
2. The patent is revoked.

The Registrar:

U. Bultmann

The Chairman:

M. Maremonti



Decision electronically authenticated