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Datasheet for the decision of 8 June 2021

Case Number: T 0420/19 - 3.3.04

Application Number: 09771493.5

Publication Number: 2373154

IPC: C12C1/18, C12C12/00, C12N15/82, C12N9/10

Language of the proceedings: EN

Title of invention:
Barley and malt-derived beverages with low dimethyl sulfide level

Patent Proprietor:
Carlsberg Breweries A/S
Heineken Supply Chain B.V.

Opponent:
Then, Christoph et al.

Headword:
Barley derived beverages/CARLSBERG

Relevant legal provisions:
EPC Art. 53(b), 56, 83

Keyword:

Exceptions to patentability - Retroactive effect of the new interpretation of Article 53(b) EPC - (no)
Inventive step - (yes)
Sufficiency of disclosure - (yes)

Decisions cited:

T 0727/95, G 0002/12, G 0002/13, G 0003/19

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern

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Case Number: T 0420/19 - 3.3.04

D E C I S I O N
of Technical Board of Appeal 3.3.04
of 8 June 2021

Appellant: (Patent Proprietor 1)	Carlsberg Breweries A/S J.C. Jacobsens Gade 1 1799 Copenhagen V (DK)
Appellant: (Patent Proprietor 2)	Heineken Supply Chain B.V. 2e Weteringplantsoen 21 1017 ZD Amsterdam (NL)
Representative:	Høiberg P/S Adelgade 12 1304 Copenhagen K (DK)
Appellant: (Joint Opponent)	Then, Ch./Tippe R./Arbeitsgemeinschaft bäuerl. Landwirtschaft./AG der Umweltbeauftragten i. d. EKD (AGU)/Arche Noah/Bund Naturschutz/ Brot f.d. Welt/Campact/Evang. Dienst auf Lande/Gen-ethisches. Netzwerk/IG Nachbau/Noah/ ProSpecieRara/Slow Food Deutschland/ Umweltinstitut München/Verband Katholisches Landvolk Frohschammerstr. 14 80807 München (DE)
Representative:	Then, Christoph Frohschammerstr. 14 80807 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 10 December 2018 concerning maintenance of the European Patent No. 2373154 in amended form.**

Composition of the Board:

Chairwoman	G. Alt
Members:	A. Chakravarty
	L. Bühler

Summary of Facts and Submissions

I. Appeals were filed both by the patent proprietor (appellant I) and by the opponent (appellant II) against the opposition division's interlocutory decision that European patent No. 2 373 154, entitled "*Barley and malt-derived beverages with low dimethyl sulfide level*", amended according to auxiliary request 8, met the requirements of the EPC (Article 101(3)(a) EPC).

II. The application underlying the patent was filed on 1 December 2009 and claims priority from a Danish application filed on 3 December 2008. The date of publication of the grant of the patent was 20 April 2016.

III. The patent had been opposed by a joint opponent with grounds for opposition according to Article 100(a) EPC in conjunction with Articles 53(b) and 56 EPC.

IV. In the decision under appeal, the opposition division held that the subject-matter of claim 6 of the main request and of auxiliary requests 1, 3, 4, 6 and 7 was excepted from patentability pursuant to Article 53(b) EPC. The ground for opposition under Article 100(b) EPC was introduced into the opposition proceedings by the opposition division, which held that the subject-matter of claim 6 of auxiliary requests 2 and 5 did not meet the requirements of Article 83 EPC.

V. With the statement of grounds of appeal, appellant I filed sets of claims of auxiliary requests 1 to 10. A set of claims of auxiliary request 11 was filed with the reply to the statement of grounds of appellant II.

VI. Claim 6 as granted (main request) reads:

"6. A barley plant, or part thereof, wherein the barley plant carries a mutation in the gene encoding methionine-S-methyltransferase(MMT) that causes a total loss of MMT function".

Claim 6 of auxiliary request 8 reads:

"6. A barley plant, or part thereof, wherein the barley plant carries a mutation in the gene encoding methionine-S-methyltransferase (MMT) that causes a total loss of MMT function wherein the mutation is a G -> A mutation of base no. 3076 of SEQ ID NO:3,

with the proviso that the barley plant has not exclusively been obtained by means of an essentially biological method".

VII. The following abbreviations are used in this decision:

"The Biotech Directive" or "the Directive" or " the EU Biotech Directive": Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the legal protection of biotechnological inventions.

"The Notice": European Commission's Notice on the interpretation of certain articles of the EU Biotech Directive (OJ EU 2016/C, 411/03).

VIII. The following documents are referred to in this decision.

D1: Kocsis M.G. *et al*. (2003), Plant Physiol., vol. 131, pages 1808-1815.

D2: US 2006/05784

IX. The board appointed oral proceedings and issued a communication pursuant to Article 15(1) RPBA 2007, setting out its preliminary and non-binding appreciation of the substantive and legal matters concerning the appeals.

X. In reply to the board's communication, appellant I submitted set of claims of auxiliary requests 3, 7 and 14 to 16. Appellant II submitted a document entitled "*Correct legal interpretation of Article 53(b) EPC, regarding the patentability of essentially biological processes in relation to plants and animals within the context of the EU patent directive 98/44*" being a "*Legal analysis provided by No Patents on Seeds!, April 2021*".

XI. The board notes that the decision under appeal and both statements of grounds of appeal predate opinion G 3/19 of the Enlarged Board of Appeal. The issuing of said opinion renders the submissions of appellant I on the subject of whether or nor the plants of claim 6 fall under the exception to patentability defined in Article 53(b) EPC moot and these are therefore not reproduced below.

XII. The remaining submissions of appellant I relevant to the present decision are summarised as follows:

Main request (the patent as granted) - claim 6

Exceptions to patentability (Article 53(b) EPC)

The plants according to claim 6 had not been exclusively obtained by means of an essentially biological process and were for that reason not excluded from patentability.

Even if they were obtained by means of an essentially biological process, the plants were not excluded based on opinion G 3/19 of the EBA.

Inventive step (Article 56 EPC)

Closest prior art

Document D2 as closest prior art

The claimed barley plants/kernels were useful in the production of beverages with very low levels of dimethyl sulphide (DMS) or even no DMS at all (see paragraph [0013] of the patent), prepared from barley malt. The low levels or absence of DMS resulted in improved flavour properties (see paragraph [0015] of the patent). The barley plant claimed in claims 6 to 10 should be evaluated based on this overall purpose of the invention and not merely on its specific mutation.

Document D1 concerned the inactivation of the methionine S-methyltranferase (MMT) gene in plants to investigate the role of the S-methyl-methionine (SMM) cycle in the sulfur metabolism and disclosed transgenic

mutant plants of *Arabidopsis* and maize, carrying insertions of large DNA fragments into the MMT gene. It did not relate to beverage production and was totally silent with respect to the problem of DMS in beverages related to conversion of plant-based SMM.

In contrast, document D2 taught that DMS was a troublesome flavour in beer and disclosed a process for producing wort and/or beer with reduced amounts of DMS. Thus, it was conceived for the same purpose and aimed at the same objective as the claimed invention. Hence, document D2 should be chosen to represent the closest prior art, even in relation to claims directed to barley plants. In terms of barley plants and their modification, document D2 however did not provide any guidance.

The problem and its solution

The difference between the plants disclosed in document D2 and the claimed ones was that the latter carried a null mutation in the gene encoding MMT. The technical effect of this difference was that beverages prepared from these barley plants had reduced off-flavours due to reduced amounts of DMS. More specifically, beverages prepared from barley plants of the invention had a level of DMS below 20 ppb, whereas beverages prepared from ordinary barley plants as described in document D2 had DMS levels above 20 ppb.

Thus, the objective technical problem was the provision of a barley plant useful for production of beverages having reduced off-flavours due to reduced amounts of DMS.

Obviousness

The skilled person starting from the barley plants disclosed in document D2 would have found no guidance therein on how to solve the technical problem, since the document did not even hint that a particular type of barley plant might be useful for production of beverages with low DMS levels. Document D2 was also completely silent regarding the MMT gene.

The skilled person starting from document D2 would not have consulted document D1 because it was from a different technical field. In any case, document D1 did not mention DMS or DMS levels in the disclosed plants or in extracts of these plants. Document D1 did not teach that DMS was exclusively produced from SMM, thus the skilled person could not reasonably have predicted the levels of DMS in an extract or beverage prepared from one of the MMT mutant plants described in Dl.

Document D1 as closest prior art

Even if document D1 was taken to represent the closest prior art for the subject-matter of claim 6, the claimed subject-matter was inventive. The difference between the plants disclosed in document D1 and those claimed was the plant species, barley instead of maize or *Arabidopsis*. The technical effect of this difference was that the claimed barley plant was useful for preparation of beer or other barley-based beverages having a low level of DMS-specific taste.

The problem and its solution

Accordingly, the objective technical problem solved by the invention of claim 6 was the provision of a plant

useful for preparation of beverages having reduced off-flavours, and in particular reduced amounts of DMS.

Obviousness

Document D1 was completely silent about off-flavours, let alone the level of DMS in food or beverages. It did not even disclose DMS levels in a simple extract prepared from the plants disclosed therein. Thus, even if the skilled person had contemplated preparing a null mutant MMT barley plant based on the teaching in document Dl, they would have had absolutely no reasonable expectation of success in solving the technical problem.

Even if the technical problem was formulated as the provision of a null mutant MMT plant of a different species, the provision of a barley null MMT mutants was by no means obvious. Firstly, the methods used in document D1 to identify mutants relied on screening pre-existing *Arabidopsis*/maize mutant libraries generated using either T-DNA insertion technology or transposon technology. However, at the relevant date of the present patent, no such libraries were readily available for barley and the generation of such libraries in barley was by no means a trivial task. In particular, no large-scale methods for insertion of T-DNA was available and the Mu element used for preparation of the maize library was a maize transposon, not available in barley. Furthermore, neither the genomic sequence of barley, nor the sequence encoding MMT in barley was known, as illustrated in example 8 of the patent.

For these reasons, the skilled person starting from document Dl, seeking to find a null MMT mutant from

another plant species, would have turned the attention to plant species for which similar mutational libraries existed and where the genomic sequence was available. They would therefore not have turned to barley.

Disclosure of the invention (Article 83 EPC)

The claimed invention met the requirements of Article 83 EPC. No serious doubts substantiated by verifiable facts supported the conclusion that the invention could not be carried out and none had been mentioned in the decision under appeal or presented by the opponent. The patent provided two specific examples of barley plants comprising a mutation in the gene encoding MMT resulting in a total loss of MMT function (Mutants 8063 and 14018). Furthermore, the patent on page 13 provided specific guidance on how to prepare the barley plants of the invention.

The opposition division was correct that the claim encompassed mutants having premature stop codons or splice site mutations resulting in truncated MMT protein without activity, as well as MMT mutants where specific mutations led to a protein without any function. Such mutants could very well occur and be identified using the methods disclosed in the patent.

The patent provided instructions on how to mutagenise barley kernels and to screen for and identify barley plants with total loss of functional MMT enzyme. Even though carrying out the invention required the screening of multiple mutants, this was a routine technique which was not an undue burden for the skilled person.

The case law of the Boards of Appeal supported this view. In decision T 223/92 it was held that an invention was sufficiently disclosed even if carrying it out was time-consuming or cumbersome.

In the case of mutagenesis, this had been held to be obvious in decision T 737/96 because it involved nothing out of the ordinary, but only the persistent application of routine mutation techniques. The same considerations applied to the ability of the skilled person to carry out mutagenesis and screening for a trait.

XIII. The arguments of appellant II, relevant to the present decision are summarised as follows:

Main request (the patent as granted) - claim 6

Exceptions to patentability (Article 53(b) EPC)

The claimed barley plants fell under the exception to patentability defined in Article 53(b) EPC because they were the direct product of an essentially biological process. The question of whether plants and animals coming from essentially biological processes used in conventional breeding were excluded from patentability under the EPC was settled by the adoption of the Biotech Directive 98/44, which became an integral part of the EPC in 1999 via the adoption of Rules 26 to 29 EPC.

The adoption of Rule 28(2) EPC by the Administrative Council of the EPOrg in 2017 was therefore not the relevant date for the exclusion of such plants from patentability. Instead this was the date on which Rules 26 to 29 were included in the EPC.

The fact that in 2020 the Enlarged Board of Appeal (EBA), in its Opinion G 3/19, confirmed the applicability of the new Rule 28(2) EPC did not change this.

The EBA held that the negative effects of the change in the Implementing Regulations did not apply to European patents containing such claims which were granted before 1 July 2017, when Rule 28(2) EPC entered into force, or to pending European patent applications seeking protection for such claims which were filed before that date. The reason for doing so was that the EBA interpreted the developments within the EU as a dynamic process which resulted in a new interpretation of patent law at the end of June 2017.

However, this interpretation was wrong. As set out above, the legally binding effects of EU law regarding the interpretation of Article 53(b) EPC that negatively affected the allowability of claims directed to plants, plant material or animals derived from essentially biological processes, were not tied to the date when Rule 28(2) EPC came into force. In fact, the intention of the EU legislator had not changed since the EU Biotech Directive came into force. The EU legislator had never intended to allow patents on plants and animals derived from essentially biological processes.

Inventive step (Article 56 EPC)

The claimed barley plants were obvious to the skilled person starting from document D1. The decisive technical step within the 'invention' was the screening of thousands of mutated barley kernels for desired biochemical characteristics. However, this manner of

proceeding was obvious to the skilled person and was exactly what was disclosed and suggested in document D1. The skilled person, in particular one focused on beer brewing, would have been interested in obtaining null mutant MMT barley plants/grains because they knew that that these would be useful for beer brewing due to their knowledge of the SMM cycle from document D1. They would, using the long established mutation and selection methods also used in document D1, have made populations of mutants and screened them for the desired biochemical characteristics. It was not relevant which specific mutation might be involved in the final phenotype. In summary, document D1 taught the skilled person how to produce plants with a desired phenotype. Therefore, the claimed barley plants could not be regarded as inventive.

Note by the board: Appellant II made no submissions on the topic of disclosure of the invention (Article 83 EPC).

XIV. Oral proceedings before the board were held by videoconference with the agreement of the parties. At the end of the proceedings, the Chair announced the decision of the board.

XV. The requests of the parties were as follows.

XVI. Appellant I requested that the decision under appeal be set aside and that the patent be maintained as granted (main request), or, alternatively, that the patent be maintained in amended form according to one of the sets of claims of auxiliary requests 1 to 16, auxiliary requests 1, 2, 4 to 6, and 8 to 13 having been filed with the statement of grounds of appeal, and auxiliary

requests 3, 7 and 14 to 16 having been filed with the letter dated 29 April 2021.

XVII. Appellant II requested that the decision under appeal be set aside and that the European patent No. 2 373 154 be revoked.

Reasons for the Decision

1. The appeals comply with Articles 106 to 108 and Rule 99 EPC and are admissible.

Main request (the patent as granted)- claim 6

The claimed invention

2. Claim 6 is directed to a barley plant (or part thereof) carrying a mutation in the gene encoding methionine-S-methyltransferase (MMT) that causes a total loss of MMT function. Thus, the claimed plant is a MMT null mutant. Kernels of the claimed barley can be used in the production of beer (see claims 1 to 3 and paragraph [0016] of the patent) having very low levels of dimethyl sulfide (DMS) or no DMS at all (see paragraph [0013]). Based on said low levels or absence of DMS, the beverages have improved flavour properties due to the absence of the masking of influences of estery compounds in beer (see paragraph [0015]).

Exceptions to patentability (Article 53(b) EPC)

3. Appellant II submitted that the claimed barley plants fell under the exception to patentability defined in Article 53(b) EPC because they were the direct product of an essentially biological process. Appellant II was of the view that such plants had been excluded from

patentability at least since the adoption of the EU Biotech Directive 98/44, which became an integral part of the EPC in 1999 via the adoption of Rules 26 to 29 EPC. They argued that the Enlarged Board of Appeal, in its Opinion G 3/19, should not have set 1 July 2017 (the date when Rule 28(2) EPC came into force) as the date when the new interpretation of Article 53(b) EPC, determined in the Opinion G 3/19, was to be applied. The legally binding effects of the EU Biotech Directive regarding the interpretation of Article 53(b) EPC that negatively affected the patentability of plants and plant material derived from essentially biological processes were not tied to the date when Rule 28(2) EPC came into force.

4. The board notes however that the EBA has, in Opinion G 3/19, already dealt with the considerations raised by Appellant II. In that opinion, the EBA abandoned the interpretation of Article 53(b) EPC given in decisions G 2/12 and G 2/13 and, in the light of Rule 28(2) EPC, held that the term "*essentially biological processes for the production of plants or animals*" in Article 53(b) EPC was to be understood and applied as extending to products exclusively obtained by means of an essentially biological process or if the claimed process feature defines an essentially biological process (see Reasons, XXVI.8).

5. However, in order to ensure legal certainty and to protect the legitimate interests of patent proprietors and applicants, the EBA further decided that "*the new interpretation of Article 53(b) EPC given in this opinion has no retroactive effect on European patents containing such claims which were granted before 1 July 2017, when Rule 28(2) EPC entered into force, or on*

pending European patent applications seeking protection for such claims which were filed before that date".

6. The EBA explicitly dealt with the question of whether the EPC legislator, by adopting Rule 26(1) EPC, intended to align the EPC with the EU Biotech Directive and hence intended Article 53(b) EPC to be interpreted as excluding from patentability products (plants and animals) exclusively obtained by essentially biological processes.

7. In response to arguments in the referral by the President of the EPO, the EBA concluded that "*the Directive itself does not directly lead to the conclusion, drawn by the EPO President, that the EPC legislator intended Article 53(b) EPC to be interpreted as excluding from patentability products (plants and animals) exclusively obtained by essentially biological processes*" and "*...neither Rule 26 EPC as such nor the very wording of the EU Biotech Directive, to which Rule 26(1) EPC refers, lead directly to an interpretation of Article 53(b) EPC which would expand the process exclusion to the products of such processes*" (see Reasons, VX.1.2 and 1.3).

8. The EBA also considered whether or not the Notice on the interpretation of the EU Biotech Directive issued by the EU Commission in 2016, in which it took the view that the EU legislator's intention in adopting the EU Biotech Directive was to exclude from patentability products (plants/animals and plant/animal parts) obtained by means of essentially biological processes, was to be taken into account under Article 31(3)(a) and (b) Vienna Convention (see Reasons, XV.2.1 to XV.2.4). It concluded that the EU Commission's Notice was not legally binding, and that the legally effective and

binding interpretation of Union law lay within the exclusive competence of the Court of Justice of the European Union (CJEU), which has the interpretative supremacy with respect to Union law (Article 19(3)(b) of the Treaty on EU (TEU), consolidated version 2016, in combination with Article 267 TFEU).

9. On the date of the Opinion of the EBA and on the date of the present decision, no decision concerning the exception to patentability in respect of animals, plants or plant materials obtained by an essentially biological process and the interpretation of Article 4 EU Biotech Directive has been handed down by the CJEU.

10. Moreover, the EPOrg was not directly bound by Union law and especially not by a legally non-binding Notice on the interpretation of the EU Biotech Directive issued by the EU Commission (see Reasons XV.2.4).

11. Since the patent was granted before 1 July 2017 (see section III above), the subject-matter of claim 6 (and dependent claims 7 to 9 and 16) is not excepted from patentability in view of Article 53(b) EPC as interpreted by the decisions of the EBA G 2/12 and G 3/12.

Inventive step -(Article 56 EPC)

12. With regard to the claim request considered allowable by the opposition division, appellant II submitted that the subject-matter of claim 6 (corresponding to claim 6 of present auxiliary request 8 with an amended proviso) lacked an inventive step in view of the disclosure in document D1 alone or in combination with common general knowledge. This reasoning applies equally to claim 6 of

the main request, of which the above subject-matter is an embodiment.

The closest prior art

13. The closest prior art for assessing inventive step is normally a prior art document disclosing subject-matter conceived for the same purpose or aiming at the same objective as the claimed invention and having the most relevant technical features in common (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, I.D.3.1).

14. In the present case, the appellant was of the view that document D2 could be taken to represent the closest prior art, while the opposition division in the decision under appeal took document D1 to represent the closest prior art.

15. Document D1 discloses that the "*Insertional Inactivation of the Methionine S-Methyltransferase Gene Eliminates the S-Methylmethionine Cycle and Increases the Methylation Ratio*" (see title). It reports that the function of S-methyl-methionine (SMM) and its cycle was investigated by isolating and characterizing insertional knockout (null) mutants of MMT in *Arabidopsis* and maize (*Zea mays*), which both have single MMT genes, and the finding that SMM was dispensable, but that eliminating it caused an increase in the adenosine-methionine level and in the methylation ratio.

The problem and its solution

16. The difference between the claimed plant and those described in document D1 is the plant species, i.e. barley rather than maize or *Arabidopsis*. The technical

effect of this difference is that MMT is knocked out in barley as opposed to maize or *Arabidopsis.* Due to the loss of MMT function, the claimed barley plants produce kernels which, when germinating, have lower SMM levels than their non-mutant equivalents. Malted barley kernels, when used in the production of beer, result in beer having a low level of dimethyl sulfide (DMS), e.g. below 20 ppb and a low level of SMM, e.g. less than 20 ppb (see paragraph [0020] of the patent). This beer has an improved taste profile due to lower DMS levels.

17. In view of the above differences and the effects thereof, the objective technical problem can be seen as provision of additional plants with an MMT null mutation.

Obviousness

18. Document D1 discloses that insertional MMT mutants of *Arabidopsis* and maize lacked the capacity to produce SMM from methionine (Met) and S-adenosyl-methionine (Ado-Met) and thus had no SMM cycle. The mutant plants nevertheless grew and reproduced normally, and the seeds of the *Arabidopsis* mutant had normal sulfur contents (see abstract). Document D1 does not mention barley and discloses no connection between the effect of knocking out the MMT gene and any potential use in the production of beer with improved flavour. Moreover, there is no mention of DMS or of any link to the problem of undesirable flavour in beer, which might have provided an incentive to create MMT null mutant barley plants. Thus, the skilled person seeking to solve the problem formulated above and starting from document D1 would have had no incentive to choose barley as an alternative plant for making MMT null mutants. In the absence of any motivation to make them,

it is the board's view that the skilled person would not have produced barley plants having an MMT null mutation.

19. Other factors that speak against the skilled person choosing to try to generate MMT null mutant barley plants are: The mutants disclosed in document D1 are insertional mutants (T-DNA insertional mutants in the case of *Arabidopsis* and *Mu* element insertional mutants in the case of maize). In the absence of a readily available library of insertional mutants of barley it would have been necessary to use a screening procedure for detecting mutant barley grains lacking MMT activity. No such assay is disclosed in either document D1 or D2. The need to develop such an assay would have dissuaded the skilled person from arbitrarily choosing barley when attempting to solve the technical problem.

20. The board is also of the view that the skilled person seeking to solve the problem starting from document D1 would not have turned to document D2 because it is from a different technical field, i.e. it relates primarily to the avoidance of troublesome flavours in beer and it suggests a thermal process for removing DMS from beer.

21. In view of the above considerations, the board concludes that the subject-matter of claim 6 was not obvious to the skilled person. Claim 6 and its dependent claims therefore meet the requirements of Article 56 EPC.

Disclosure of the invention (Article 83 EPC)

22. In the decision under appeal, in respect of claim 6 of auxiliary request 2 which differs from claim 6 of the claims as granted except only in that it includes a

proviso that the barley plant has not exclusively been obtained by means of an essentially biological method, the opposition division held that the requirements of Article 83 EPC were not met. Appellant I has challenged this decision, while appellant II made no submissions on this topic.

23. The opposition division considered that the only methods given in the patent to obtain the claimed mutants was mutagenesis and subsequent screening, thus relying on identification of a chance event. In view of the number of plants that would have to be screened to arrive at the claimed invention, it was undue burden to identify further mutants in addition to those deposited pursuant to Rule 31(1)(a) EPC, been identified by this method (see Examples 1 and 2 of the patent).

24. Article 83 EPC requires that the European patent discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. To carry out the claimed invention, the skilled person must on the basis of the disclosure in the patent and of common knowledge in the art, be able to obtain the claimed plants without undue burden (see Case Law of the Boards of Appeal of the European Patent Office, 9th edition 2019, II.C.4.1).

25. The board considers that in the present case, the skilled person would be able obtain a barley plant as claimed by following the methods outlined in the patent. Specifically, the skilled person would be able to mutagenise barley seed kernels and subsequently screen the resulting mutants in the M3 generation using the assay described in paragraph [0179].

26. Appellant II, in the context of their submissions on inventive step, argued that the skilled person knew how to arrive at the claimed invention by screening mutated plants for the desired phenotype. The board agrees. In the present case, the skilled person knew, at least from the disclosure in the patent, that barley plants contained the MMT gene to be knocked out and that knocking out this gene would lead to the desired phenotype and also knew from the patent the rough likelihood of obtaining a relevant mutation. The patent discloses in paragraph [0181] that a total of 10,248 and 3,858 NaN_3-mutated kernels of barley cv. Prestige and cv. Sebastian were screened to obtain two relevant mutants. The patent furthermore provides a rapid high-throughput screening procedure for detection of mutant barley grains lacking MMT activity (see paragraph [0178]).

27. The board considers that the mere fact that mutagenesis is a random process and that large numbers of mutant barley plants might have to be screened does not, in the present case, represent an undue burden the skilled person. The board therefore does not agree with the opposition division that the fact that mutagenesis, due to reliance on mutations at "random" locations in the genome, necessarily represents an undue burden for the skilled person. This view is supported in the case law - in decision T 727/95, the competent board held that "*relying on chance for reproducibility amounts to undue burden in the absence of evidence that such chance events occur and can be identified frequently enough to guarantee success*" (see Reasons 11). In the present case, the invention is reproducible without undue burden because there is evidence that the chance event can be identified frequently enough to guarantee success.

28. In view of the above considerations, the board concludes that the invention of claim 6 and its dependent claims meets the requirements of Article 83 EPC.

29. No further objections under any other articles of the EPC were raised by the opponent.

30. The claims of the patent as granted and their subject-matter are considered to meet the requirements of the EPC.

Order

For these reasons it is decided that:

1. The decision under appeal the set aside.

2. The patent is maintained as granted.

The Registrar: The Chair:

A. Chavinier G. Alt

Decision electronically authenticated