Opposition against European Patent EP 2 575 433 B1

Title: ENERGY SAVING BREWING METHOD
Application number: 11729247.4
Proprietor: Carlsberg Breweries A/S, Heineken Supply Chain B.V.
Date of publication and mention of the grant of the patent: 07.09.2016
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Fee for this opposition paid into EPO bank account:

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Signature of opponent Dr. Christoph Then:

Opponents:*

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Arbeitsgemeinschaft der Umweltbeauftragten der Gliedkirchen der Evangelischen Kirche in Deutschland (AGU)

ARCHE Noah, Österreich

ARGE Schöpfungsverantwortung, Österreich

Bioland

Brot für die Welt Brot für die Welt - Evangelischer Entwicklungsdienst

Bündnis gentechnikfreie Landwirtschaft

Bund Naturschutz Bayern (BN)

Bund für Umwelt und Naturschutz Deutschland (BUND)

Bundesverband Naturkost Naturwaren (BNN)

Campact

Die Freien Bäcker

Evangelischer Dienst auf dem Land in der EKD (EDL)

Erzeugergemeinschaft für ökologische Braurohstoffe (EZÖB)

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Gäa e.V.- Vereinigung ökologischer Landbau

GAIA Portugal

Gen-ethisches Netzwerk (GeN)

Horizont3000, Austrian Organisation for Development Cooperation, Österreich

IG Milch, Austria

IG Nachbau

Katholische Landvolkbewegung (KLB)

Kopenhagen Food co-operative, Denmark

Dr. Ruth Tippe (supported by Kein Patent auf Leben!)

Dr. Christoph Then (supported by No patents on seeds!)

NOAH – Friends of the Earth, Denmark

Plataforma transgenicos fora, Portugal

ProSpecie Rara, Schweiz

Pro Regenwald

Sambucus

Slow Food Deutschland

Swissaid, Schweiz

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Verband Katholisches Landvolk (VKL)

WeMove.EU

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Zivilcourage Miesbach

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Zukunftsstiftung Landwirtschaft (Save our seeds!)

***if not mentioned otherwise, the country of residence is Germany**

Further, the following individuals from Austria are joining as opponents: Dietmar Bauer, Rupert Esberger, Dr. Manfred Gamauf, Ing. Gottfried Hoinig, Kurt Huber, Bernhard Kaiser, Martin Kaiser, Erwin Pichler, Alexander Schwartz, Michael Schwartz, Thomas Wagner, Lucia Zisser, Roland Zisser.

Opposition is filed against the patent as a whole. Revocation of the whole patent and if necessary a public hearing of the opposition is requested.

Reasons for opposition:

1. The patent violates Art 53(b) EPC because it claims plant varieties and plants derived from essentially biological processes.

2. The patent is not inventive and therefore violates Art 56, EPC.

1. Violation of Article 53(b), EPC

1.1 The content of the patent and its teaching

The patent claims barley plants with a combination of traits including null-LOX-1-null-LOX-2-null-MMT (also called a double-null-LOX-null-MMT), which is supposedly useful in the preparation of beverages, such as beer. The plants are intended for cultivation and for the production of barley kernels that can supposedly reduce the amount of energy needed during the brewing process.

The plants characteristics used to achieve the combination as claimed in the patent were derived from random mutations, and were already described in patents EP 2384110 (WO 2010/075860) and EP 2373154 (WO 2010/063288). No inventive step was added. Compared to the previous patents, the only difference described is the crossing and selection resulting in a combination of the traits.

Claim 7 reads:

> *"A barley plant, or a part thereof, wherein said barley plant comprises:*
> *a) a first mutation that results in a total loss of functional LOX-1, and*
> *b) a second mutation resulting in a total loss of functional LOX-2 and*
> *c) a third mutation resulting in a total loss of functional MMT."*

The process used to produce the plants is described on page 33 of the patent:

> *"Accordingly, this disclosure also is directed to methods for producing a new double-null-LOX-null-MMT barley plant by crossing a first parental barley plant with a second parental barley plant, wherein the first or second plant is a double-null-LOX-null-MMT barley. Additionally, both first and second parental barley plants can come from a double-null-LOX-null-MMT barley variety."*

Further, Example 3 (page 37) is presented as follows:

> *"**Barley crossings***
> *FIG. 3 summarizes how the double-null-LOX-null-MMT barley line of the instant invention was developed by first crossing barley line A689 [double null-LOX cf. PCT patent application no PCT/DK2009/050355 (published as WO2010/075860)] with line 8063 [null-MMT cf. PCT Patent Application No. PCT/DK2009/050315 (published as WO2010/063288)]. Using standard breeding techniques, doubled haploid lines were developed, and propagated in the greenhouse. Of these, the best-performing lines with regard to agronomic performance - as well as an absence of LOX-1 activity (cf. Example 2 in U.S. Patent No. 7,420,105 to Breddam, K. et al.), an absence of LOX-2 activity (cf. Example 2 in PCT Application No. PCT/DK2009/050355 (published as WO 2010/075860), and Example 1 herein), as well as an absence of SMM and MMT activity (Examples 2 and 4*

(see below) in PCT Application No. PCT/DK2009/050315 (published as WO2010/063288), and Example 2 herein) - were selected for further propagation and analysis. These lines are denoted "Triple-Null" herein. In general for LOX activity determinations, seeds of double haploid lines were harvested and followed by analysis of 12 grains of each line and control varieties, giving a <5% standard deviation for the measurements (FIG. 4)."

1.2 The scope of the patent

Claim 7 as granted not only covers barley plants derived from the processes described in the patent, but also plants inheriting similar or the same genetic conditions and phenotypical characteristics either stemming from native traits, or from other methods used in conventional breeding. The patent also covers methods for brewing and beverages, such as beer, using the claimed barley plants.

1.3 Legal analysis

Article 53(b) of the European Patent Convention (EPC), as well as Article 4 of EU Directive 98/44/EC prohibit patents on

"plant or animal varieties or essentially biological processes for the production of plants or animals"

As shown in the description e.g. on page 33 and in Example 3 (page 37), plant varieties (or "cultivars") are used to produce the plants as claimed. Further, the outcome and the goal of the breeding process has to be classified as varieties. Therefore, the patent violates Article 53 (b) with regard to the exclusion of plant varieties: Plant varieties are mentioned as being the source for further crossings as described in the patent and inevitably plant varieties also are the final result of the these crossings.

Furthermore, the plants as claimed result from a process of crossing and selection, a process that must be considered to be "essentially biological". Therefore, these plants are not patentable.

Finally, the characteristics of the parental plants that are used as a starting point to achieve the combination as claimed, are derived from random mutations, which also have to be considered to be essentially biological processes (in accordance with patent law). As the European Commission – based on the history and the text of the EU Directive 98/44 which is part of the Implementing Regulations of the EPC - stated[1]:

"The trigger point for ensuring the patentability of either a plant or an animal is the technical process, such as for instance the insertion of a gene into a genome. Essentially biological processes are not of a technical nature and therefore, according to the position taken by the legislator, they cannot be covered by a patent."

It is evident that the random mutations used as the basis for the granting the patent do not fulfil the criteria to allow patentability as described by the European Commission.

As a result, the patent violates Article 53 (b). Consequently, claims 7-16, as well as claim 16, must be revoked.

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1 http://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1478769496064&uri=CELEX:52016XC1108(01)

2. Violation of Art 56, EPC

2.1 The content of the patent and its teaching

With regard to the inventiveness of the patent, the following observations can be made:

- As the description of the patent shows, the relevant biochemical processes of the occurrence and impact of dimethyl sulfide (DMS) and/or its precursor S-methyl-L-methionine (SMM), as well as the function of the methionine-S-methyltransferase (MMT) were known previously.
- As the description of the patent shows, the relevant biochemical processes of the occurrence of the two lipoxygenase (LOX) enzymes, LOX-1 and LOX-2 and their impact on levels of the off-flavour compound trans-2-nonenal (T2N) were known previously.
- The method of chemical mutagenesis as applied to the barley was also previously known.
- The plants carrying the relevant mutations and used for further crossing were fully described in previous patents.
- The methods for brewing beer were also described in the previous patents.

Thus, the patent does not involve any inventive step.

2.2 Conclusions on Art 56, EPC

With regard to Art 56 EPC, the patent has to be revoked in its entirety due to lack of inventiveness.

Annex:
Signed formulars for opposition