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**Datasheet for the decision
of 6 March 2014**

Case Number: T 1812/09 - 3.3.04

Application Number: 03013148.6

Publication Number: 1371283

IPC: A01H3/04

Language of the proceedings: EN

Title of invention:

Seed and plant containing vitamin B12 and method of producing the same

Applicant:

President of Hiroshima University

Headword:

White radish sprouts containing vitamin B12/ HIROSHIMA
UNIVERSITY

Relevant legal provisions:

EPC Art. 54, 56, 83, 84, 123(2)

Keyword:

"Main request - requirements of the EPC met (yes) "

Decisions cited:

Catchword:



**Beschwerdekammern
Boards of Appeal
Chambres de recours**

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Case Number: T 1812/09 - 3.3.04

D E C I S I O N
of Technical Board of Appeal 3.3.04
of 6 March 2014

Appellant: President of Hiroshima University
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Hiroshima 739-8511 (JP)

Representative: Katzameyer, Michael
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Decision under appeal: **Decision of the Examining Division of the
European Patent Office posted on 21 April 2009
refusing European patent application No.
03013148.6 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman: C. Rennie-Smith
Members: R. Morawetz
M. Montrone

Summary of Facts and Submissions

- I. This appeal was lodged by the applicant (hereinafter "appellant") against the decision of the examining division to refuse European patent application number 03013148.6, published as EP 1 371 283 (hereinafter "the application as filed"). The decision was based on a main request filed with a letter dated 1 March 2009 and auxiliary request 1 filed during oral proceedings before the examining division on 3 April 2009. The main request was found to lack inventive step (Article 56 EPC) and the auxiliary request was found not to comply with the requirements of Article 123(2) EPC.
- II. The appellant requested that the decision of the examining division be set aside and a patent be granted on the basis of the main request filed on 1 March 2009 or the auxiliary request filed on 21 August 2009 together with the grounds of appeal. Oral proceedings were requested in the event that the board was disinclined to grant a patent on the basis of the written procedure.
- III. Claim 1 of the main request read:
- "1. A method of producing plant sprouts containing no less than 0,01 µg of vitamin B12 per g edible portion, characterized by comprising:
- (1) soaking a seed of a plants in a soaking solution containing no less than 100 µg/ml of vitamin B12;
 - (2) removing the seed from the soaking solution and cultivating the seed in the absence of vitamin B12; and
 - (3) harvesting the sprouts."

Claim 1 of the auxiliary request read:

"1. A method of producing plant sprouts containing no less than 0,01 µg of vitamin B12 per g edible portion, characterized by comprising:

(1) soaking a seed of the plants in a soaking solution containing no less than 100 µg /ml of vitamin B12 for 30 minutes, 1 hour, 2 hours, 3 hours, 5 hours or 6 hours;

(2) removing the seed from the soaking solution and cultivating the seed in the absence of vitamin B12; and

(3) harvesting the sprouts."

- IV. On 26 July 2013 the board sent a summons to oral proceedings scheduled for 6 March 2014.
- V. As a response, the appellant submitted on 3 February 2014 auxiliary requests 2 to 25 and arguments in favour of inventive step.
- VI. In a communication dated 4 February 2014, the board informed the appellant of its preliminary view that both the main and the auxiliary request contained subject-matter which extended beyond the content of the application as filed. A further communication was sent on 6 February 2014 indicating that, in the preliminary view of the board, auxiliary requests 2 to 25 suffered from the same deficiencies under Article 123(2) EPC.
- VII. On 26 February 2014, the appellant filed a new main request and auxiliary requests 1 to 25.
- VIII. In the oral proceedings held on 6 March 2014, the appellant withdrew all pending requests and filed a new main request which forms the basis of the present decision. The sole claim of this request read:

*"1. A method of producing white radish sprouts containing no less than 0,5 µg of vitamin B12 per g edible portion, characterized by comprising:
(1) soaking white radish seeds in a soaking solution containing 200 µg/ml of vitamin B12 at room temperature for 6 hours;
(2) removing the seeds from the soaking solution and then cultivating the seeds in the absence of vitamin B12 for 6 days; and
(3) harvesting the sprouts."*

IX. The documents referred to in this decision are:

(D1) GB 1,108,164

(D7) US 5,773,681

X. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the main request filed during the oral proceedings.

Reasons for the Decision

Article 123(2) EPC

1. The board is satisfied that paragraph [0062] of the application as filed provides a basis for the subject-matter of claim 1. This paragraph corresponds to the only example of the description and discloses the cultivation of white radish sprouts wherein the seeds are soaked in a soaking solution containing 200 µg/ml of vitamin B12 at room temperature for 6 hours, and then scattered on moistened cotton wool and allowed to grow for 6 days in the absence of vitamin B12, resulting in sprouts containing no less than 0,5 µg/g

of vitamin B12. Present claim 1 contains thus all the technical features of the example except for the feature relating to the scattering of the seeds on moistened cotton wool.

2. According to established case law of the Boards of Appeal it is normally not allowable to base an amended claim on the extraction of isolated features from a set of features originally disclosed only in combination. It is justified only in the absence of any clearly recognisable functional or structural relationship among the features of the specific combination and if the extracted feature/s is/are thus not inextricably linked with those features (see Case Law of the Boards of Appeal of the EPO, 7th edition 2013, section II.E.1.2).

3. It thus needs to be determined whether the technical information present in the example but not in claim 1 is structurally or functionally linked with the remaining features of said claim. The board considers that the final content of vitamin B12 in the white radish sprouts will be determined by the amount of said vitamin in the soaking solution, the soaking time, the temperature and the length of time between cultivation and harvesting, but not necessarily by the way the seeds are disposed (by scattering or another way) or by the support used for the cultivation (cotton wool or something else). The skilled person would thus understand that these two features are not functionally linked with the other technical features of the method of claim 1. Hence, the absence of the feature relating to the scattering of the seeds on moistened cotton wool in claim 1 does not amount to an unallowable intermediate generalization and the claim complies with

the requirements of Article 123(2) EPC.

Articles 83 and 84 EPC

4. The board is satisfied that the method of claim 1 contains clear instructions which the skilled person would reproduce without undue difficulty. Moreover, the results of the example show that sprouts containing over 0,5 µg of vitamin B12 can indeed be produced by the claimed method (see paragraph [0062] and Table 1 of the application as filed). The main request meets the requirements of Articles 83 and 84 EPC.

Article 54 EPC

5. The examining division raised no novelty objection with regard to subject-matter which was broader than the presently claimed subject-matter (see decision under appeal, point 1.2). The board is also satisfied that none of the documents on file anticipates the claimed subject-matter. The main request meets the requirements of Article 54 EPC.

Article 56 EPC

Closest prior art

6. A prior art document qualified to represent the closest state of the art must be directed to the same purpose or effect as the invention. The invention underlying the present application concerns the provision of edible sprouts containing vitamin B12 and which can be used as a nutritional supplement in cases of vitamin B12 deficiency.
7. In the decision under appeal, document (D7) has been considered to represent the closest prior art. The

board sees no reason to differ. Document (D7) discloses the provision of electrolyte-enriched plant embryos which have also a higher vitamin content (see column 2, last paragraph) and which can be used in the treatment and prevention of nutritionally caused or nutritionally dependent diseases, including devitaminization states (see column 4, lines 15-27).

Problem and its solution

8. The board observes that the present application does not indicate any superior effect of the method used for providing vitamin-enriched sprouts vis-à-vis the method known from document (D7). Hence, the problem to be solved starting from said document is formulated as the provision of an alternative method to provide vitamin-enriched sprouts.

9. Table 1 of the present application shows the final content of vitamin B12 in the sprouts produced according to the method of the example, which confirms that the conditions specified in claim 1 result indeed in sprouts with a significant amount of vitamin B12. The board is thus satisfied that the subject-matter of claim 1 provides a solution to the problem mentioned above.

Obviousness

10. The skilled person knows from document (D7) that the vitamin B1 content of radish embryos (sprouts) can be increased by soaking the seeds with certain electrolyte solutions. This document teaches in columns 11 to 13 that seeds wherein "practically no vitamin B1 could be detected" became embryos containing 0,21 µg/g thiamin (vitamin B1) after being exposed to a particular

electrolyte solution. Columns 7 to 10 disclose another example wherein the content of vitamin C was increased in electrolyte-soaked sprouts with respect to the seeds. In these examples the electrolyte solutions did not contain any vitamin, so it is clear that the plant was able to produce it by itself. This is confirmed by the fact that plants raised from the seeds soaked only with tap or distilled water also contained the vitamin, albeit in lesser amounts.

11. Starting from document (D7) and faced with the problem formulated above (see point 8), the skilled person would logically consider first the production of vitamin-enriched plant embryos/sprouts with vitamins naturally produced by plants. Since the electrolyte solutions used in document (D7) did not contain any vitamin at all, the person skilled in the art would not have any reason to assume that the method would be applicable to the enrichment of vitamins which a plant cannot produce itself, like vitamin B12. In fact, vitamin B12 is produced only by limited types of vitamin B12-producing bacteria (see e.g. paragraph [0006] of the application as filed). Hence, the subject-matter of claim 1 cannot be considered to be obvious from the disclosure of document (D7), when considered alone.

12. The examining division held (see decision under appeal, reasons, point 1.4) that document (D7) applied generally to the fortification of plant sprouts with any water soluble vitamin, mineral or trace element not sufficiently provided for in the human diet and that the incubation conditions such as soaking time and concentration of the soaking solution could be identified by simple tests. Moreover, it argued (see decision under appeal, reasons, point 1.5) that

substances solved in water were simply taken up by seeds together with the water during the first phase of water uptake during seedling development and that the teaching of document (D1) implied the uptake of vitamin B12 into the plant seeds. In document (D1) radish seeds were germinated in the presence of vitamin B12 which resulted in better plant growth (page 2, left column, lines 60-65).

13. The relevant question to be addressed is however whether the skilled person would have had any motivation to combine the teaching of document (D7) with that of document (D1).

14. Document (D1) pertains to plant nutrient solutions which are useful for the hydroponic growth of plants (see page 1, left column, lines 9 to 12). This document discloses that seedlings were "substantially longer with better growth" after being in a solution with cobalt as compared with a solution without it (see page 2, left column, lines 48 to 51). The same result was found when cobalt was substituted by vitamin B12 (see page 2, left column, lines 61 to 65). Document (D1) fails however to provide any data concerning the possible uptake and enrichment of cobalt or vitamin B12 by the radish seeds or even to mention it. Unlike the present application (or document (D7)) the term "nutrient" in document (D1) refers to substances solely useful in promoting the growth of a plant, and not to substances being relevant for example in human nutrition. Since document (D1) is concerned with plant growth *per se* and not with the presence of any particular mineral or vitamin in an edible sprout, the board is of the opinion that the skilled person would not turn to this document when trying to find alternative methods for providing vitamin-enriched

sprouts.

15. Even when assuming that the disclosure of document (D1) implies that there is indeed some uptake of vitamin B12 when it is used in a solution for favouring plant growth, and further assuming that the skilled person faced with the problem put forward in point 8 above was aware of this information, in the board's judgement he or she would not arrive at the subject-matter claimed in an obvious way by combining the teaching of document (D1) with that of document (D7). This is due to the fact that the skilled person in testing the possible fortification of radish sprouts with vitamin B12 would follow the germination conditions of document (D1) and would thus soak the seeds in a solution containing vitamin B12 for three days at room temperature. Hence, document (D1), if used at all, would prompt the skilled person to use a longer soaking period than used according to the method of claim 1. Finally, document (D1) is silent regarding the concentration of vitamin B12 being used.
16. None of the other documents on file contain any teaching or suggestion that it would be possible to enrich vitamin B12 in sprouts by soaking seeds in a soaking solution containing vitamin B12.
17. In summary, the board concludes that none of the documents on file would have motivated the skilled person to modify the teaching of document (D7) so as to arrive at the claimed invention in an obvious manner. The main request complies with the requirements of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance with the order to grant a patent on the basis of the main request filed during oral proceedings and the description and figure to be adapted thereto.

The Registrar:

The Chairman:



P. Cremona

C. Rennie-Smith

Decision electronically authenticated