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**D E C I S I O N**  
**of 19 May 2004**

**Case Number:** T 0441/02 - 3.3.3

**Application Number:** 95926341.9

**Publication Number:** 0769026

**IPC:** C08B 37/18

**Language of the proceedings:** EN

**Title of invention:**

Fractionated polydisperse compositions

**Patentee:**

Tiense Suikerraffinaderij N.V. (Raffinerie Tirlemontoise S.A.)

**Opponent:**

WARCOING INDUSTRIE S.A. et al.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 54, 56, 83, 114

EPC R. 57a

**Keyword:**

"Novelty (yes) - no implicit disclosure - prior use not established"

"Inventive step (yes) - non obvious process leads to non obvious product"

**Decisions cited:**

G 0009/91, G 0010/91, T 0595/90, T 1002/92

**Catchword:**

-



**Case Number:** T 0441/02 - Error! Reference source not found.

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.3**  
**of 19 May 2004**

**Appellant:** WARCOING INDUSTRIE S.A. et al.  
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**Decision under appeal:** Interlocutory decision of the Opposition  
Division of the European Patent Office  
announced on 12 February 2002, issued in  
writing on 7 March 2002 concerning maintenance  
of European patent No. 0769026 in amended form.

**Composition of the Board:**

**Chairman:** R. Young  
**Members:** P. Kitzmantel  
H. Preglau

## Summary of Facts and Submissions

I. Mention of the grant of European patent No. 0 769 026 in respect of European patent application No. 95 926 341.9 (PCT/BE95/00067, WO 96/01849) in the name of Tiense Suikerraffinaderij N.V. (Raffinerie Tirlemontoise S.A.), which had been filed on 7 July 1995 claiming two BE priorities of 7 July and 30 September 1994, was announced on 8 September 1999 on the basis of 19 claims, Claim 1 reading as follows:

"1. Fractionated polydisperse carbohydrate composition, characterised in that it:

- has an av. DP which is double or higher than the av. DP of the native polydisperse carbohydrate composition,
- is containing less than 0.2 wt% monomers and less than 0.2 wt% dimers and less than 1.5 wt% oligomers with a DP < 10,
- is containing less than 0.2 wt% ash, and
- does not contain any detectable amount of technological aids."

Independent Claims 11 and 12 related to processes for producing a composition according to any one of the claims 1 to 10, independent Claim 17 related to a composition having a creamy structure comprising the fractionated polydisperse carbohydrate composition according to any one of the preceding claims 1 to 9, and independent Claim 19 related to a pharmaceutical, cosmetical, feed and/or food composition comprising the composition according to any one of the claims 1 to 10 and/or according to the claims 17 or 18.

The further claims were, respectively, dependent on Claim 1 (Claims 2 to 10), Claims 12 (Claims 13 to 16) and Claim 17 (Claim 18).

II. Notice of Opposition requesting revocation of the patent in its entirety on the grounds of Article 100(a) and (b) EPC was filed conjointly by Warcoing Industrie S.A. and Sensus Operations C.V. on 6 June 2000.

The opposition was *inter alia* based on documents

A1: Le Sillon Belge, 21 April 1989,

A3: J.R.Katz and A.Weidinger (1931), Rec. trav. Chim., 50, 1133 to 1137,

A4: E.Yanovsky and R.M.Kingsbury (1933), Am. Chem. Soc., 55, 3658 to 3663,

A5: E.J.McDonald, Adv. Carbohydrate Chemistry 2, 1946 (253), and

A10: "La cristallisation fractionnée de l'inuline", study made by Philippe Decap on request of Warcoing Industrie s.a..

III. By its interlocutory decision announced orally on 12 February 2002 and issued in writing on 7 March 2002, the Opposition Division found that, account being taken of the amendments made according to the (then) first auxiliary request, the patent and the invention to which it relates met the requirements of the EPC.

Claims 1 and 5 to 7 of this first auxiliary request read as follows:

"1. Fractionated polydisperse inulin composition, characterised in that it:

- has an average degree of polymerisation (av. DP) which is double or higher than the av. DP of the native polydisperse carbohydrate composition,
- is containing less than 0.2 wt% monomers and less than 0.2 wt% dimers and less than 1.5 wt% oligomers with a DP < 10,
- is containing less than 0.2 wt% ash, and
- does not contain any detectable amount of technological aids

being a crystallised composition present in the form of spherical particles having a diameter comprised between 1 and 100 µm, radial symmetry, and presenting double breaking and perpendicular fade cross under polarised light."

"5. Composition having a creamy structure comprising the fractionated polydisperse inulin composition according to any one of claims 1 to 4.

6. Pharmaceutical, cosmetical, feed and/or food composition comprising the composition according to any one of the claims 1 to 4 and/or composition according to claim 5.

7. A process for the preparation of a fractionated polydisperse inulin composition as defined in any of claims 1 to 4, characterised in that it comprises the following subsequent steps:

- the preparation of a metastable solution of a native polydisperse inulin composition,
- a directed crystallisation of said metastable solution, comprising a rapid achievement of a high degree of super saturation of said aqueous solution, obtained by a rapid cooling down involving an important temperature modification, by a rapid concentration increase involving an important concentration modification, or by a combination of both,
- a separation of the obtained particles after crystallisation,
- a washing with water of the separated particles,
- possibly a drying of the washed particles,
- possibly a spray-drying of the washed particles."

The further claims were, respectively, dependent on Claim 1 (Claims 2 to 4) and Claim 7 (Claims 8 to 11).

IV. It was held in that decision that the subject-matter of the (then) main request - whose Claim 1 corresponded to the granted version but restricted to inulin - met the requirements of Articles 54 and 83 EPC but did not comply with those of Article 56 EPC.

In particular, it was obvious, by following the teaching of A1, to arrive at long chain fructosaccharides having the claimed degree of polymerisation because this document taught that these species crystallised first during the fractional crystallisation of inulin by gradual cooling at temperatures between 40 and 10°C. The skilled person would expect that by this technique precipitation of the more soluble monomers and dimers would be avoided and that impurities such as ash and technological aids

could be removed. Nor could an inventive step be acknowledged on the basis of the existence of an unexpected technical effect because the alleged achievement of a well filterable product could only be achieved with a specific crystal morphology which was not a feature of Claim 1 of the main request.

The subject-matter of the first auxiliary request was held to be novel and inventive because none of the prior art documents suggested the provision of inulin in the form of spherical particles having a filterability permitting manufacturing of large quantities directly by a directed crystallisation in an industrial process. Moreover it was considered surprising to obtain a purer product by rapid than by slow cooling down.

- V. On 29 April 2002 the Opponent (Appellant) lodged an appeal against the decision of the Opposition Division and paid the appeal fee on 2 May 2002. The Statement of Grounds of Appeal was filed on 4 July 2002.

With regard to the claims considered allowable by the Opposition Division the Appellant presented the following arguments in its written submissions (Grounds of Appeal and letter dated 13 October 2003) and at the oral proceedings held on 19 May 2004:

- (a) The subject-matter of Claim 1 was anticipated by document A1 because it was established by the experimental reports contained in

- document A10 (Decap report),

- annex 1 to the Statement of Grounds of Appeal (experimental report by Royal Cosun dated 7 June 2002) and
- annex 2 to the Statement of Grounds of Appeal (experimental report by Warcoing dated 01.07.02)

that A1's teaching inevitably led to an inulin composition having the characteristics of this claim irrespective of the cooling conditions employed, by forced quick cooling to 2°C (annex 1) or by just exposing the hot aqueous extract to ambient temperature (annex 2). In both cases relatively spherical, birefringent inulin particles were obtained whose average DP (degree of polymerisation) was more than double that of native inulin and which could be freed by washing with water from monomers, dimers, and oligomers having a DP <10.

Since these different cooling conditions led both to particles within the definition of Claim 1 it was of no consequence for the assessment of novelty that the words "refroidir graduellement" in A1 left room for interpretation.

It was furthermore known from documents A3, A4 and A5 as well as from annex 9 of the Grounds of Appeal (The Merck Index, tenth edition 1983, page 725) that inulin crystallises from aqueous solutions in the form of doubly refracting spherocrystals showing a perpendicular fade cross under polarised light.



(b) The subject-matter of Claim 1 was furthermore anticipated by prior public use of the following products:

(b1) Chicory inulin I-2255 from Sigma-Aldrich, lot 79F7105: allegedly in the Appellant's possession since 1989, produced by Sigma in July 1989 (cf. annex 11 of the Appellant's submission dated 13 October 2003: undated and unsigned data sheet from Sigma-Aldrich) and exhibiting the purity requirements of present Claim 1 (annex 10 of the Appellant's submission dated 13 October 2003: Declaration of Centrum voor Landbouwkundig Onderzoek dated 22 July 2003 comprising analysis data of this lot).

Concerning the missing information in this evidence about the claimed morphological features (spherical particles having radial symmetry, double breaking with perpendicular fade cross under polarised light) the Appellant argued that these would be destroyed by drying and could not be ascertained therefore on the commercialised products.

(b2) Fibruline® LC, Warcoing's modified inulin product, not explicitly mentioned but [allegedly] *de facto* referred to in document A1; commercialised prior to the effective date of the patent in suit, as established by:

(i) annex 7 of the Grounds of Appeal: letter dated 17.03.1992 from Georg Breuer to Warcoing S.A., Dr. Fockedey, asking for a

sample of "modified inulin (without the sugars)" to be delivered to Martin Bauer; in combination with:

annex 8 of the Grounds of Appeal: study paper of the Dental Institute of Zurich University "Telemetric Evaluation of the Acidogenic Potential of an Instant Tea based on Fibruline provided by Martin Bauer" dated June 1992, referring to a new "Fibruline type (longer chains)" having the sample identification No. 815/92, which was tested by "Dauernuckeln" from a nursing bottle and found to be "safe for teeth" - in contrast to a sample of "old" Fibruline which was considered unsafe for teeth.

(ii) Analysis data (chromatograms) of two samples (cf. letter dated 6 February 2002 from Warcoing to M. Leherte) comprising:

- data related to "File: XA08A022.DXD Sample LC 1 40 61 - A21" with the handwritten comment: "Long Chain Inulin Warcoing production 2001 - même procédé qu'en 1993"; and
- data related to "File: U701A004.DXD Sample Raftliline HP - A07" with the handwritten comment "Inulin Orafti (Tirlemont)";

both samples exhibiting a very similar DP distribution indicating very small amounts of low DP sugars.

(iii) annex 3 of the Grounds of Appeal (Declaration of Sensus Operations C.V., Dr.

P.D. Meyer, dated 2 July 2002) stating that in 1993 Sensus had received Fibruline LC samples from Warcoing which had a DP double that of native inulin.

- (iv) annex 4 of the Grounds of Appeal (Declaration of Warcoing Industrie, Dr. Fockedey, dated 28.06.2002 comprising two pages of a handwritten protocol of production operations carried out between 29/3/93 and 21/6/93 comprising information about the DP ("longeur chaine en unites fr. + gl.") of the produced materials) setting out that
- in 1993 Warcoing had a pilot production of "long chain inulin" having a DP double that of native inulin; and
  - at the end of 1993 Warcoing commercialised the long chain inulin Fibruline LC; as confirmed by the offer from Cosucra, Marc Thone, to Georg Breuer GmbH Food Agency, handwritten (without date) on the letter of Georg Breuer GmbH Food Agency dated 14.01.94 asking for a price for Fibruline LC for Martin Bauer (annex 5 of the Grounds of Appeal).
- (v) annex 6 of the Grounds of Appeal (facsimile from Sensus, Fred van Leeuwen, to Bucker Fach Verlag dated 9 September 1996 plus attached pages 60 and 62 of the Journal "Milch-Marketing 4/1994") relating to long

chain Fibruline LC that does not contain residual sweetness ("keine Restsüße").

- (c) In view of the fact that process Claim 7 comprised a number of terms (metastable, directed crystallisation, rapid cooling down, rapid concentration increase, etc) which were vague and could not therefore qualify as distinguishing features, A1's disclosure of the fractionated crystallisation of inulin was novelty destroying for the subject-matter of this process claim.
- (d) From the afore-mentioned vagueness of the definition of the process features it also followed that, contrary to Article 83 EPC, carrying out this process required undue burden.
- (e) Considering that the only possible distinction between the subject-matter of Claim 1 and the inulin products resulting from the fractionated crystallisation process according to document A1 was a different (lower) content of low DP species (monomers, dimers and oligomers having a DP <10) as well as of further impurities (content of ash and technological aids), and furthermore considering that the skilled person was aware of the desirability of inulin products having a low content of low DP species, as was apparent *inter alia* from annexes 6 and 8, it did not require inventive skill to prepare such inulin fractions by appropriately intense washing. That this led to the desired claimed purity was established by the washing steps performed according to annexes 1 and 2.

VI. The arguments of the Respondent/Patentee submitted in its letters dated 5 November 2002 and 13 April 2004 as well as at the oral proceedings may be summarised as follows:

(a) The new evidence submitted with the Statement of Grounds of Appeal and with the Appellant's submission of 13 October 2003 was filed too late and should not be admitted into the appeal.

(b) The disclosure of document A1 was too vague and imprecise to be novelty destroying for the present subject-matter because neither did it mention any of the morphological, purity- and DP-related features of Claim 1 nor would the information therein concerning the conditions of preparation inevitably lead to the fulfilment of all of Claim 1's characteristics. This conclusion was not refuted by the experimental evidence contained in annexes 1 and 2:

(i) these annexes only showed that the teaching of D1 could provide relatively spherical particles (annex 1: "irregular spherical particles"; annex 2: "particules relativement sphériques") of inulin having a DP more than double that of native inulin which could be purified to the standard required by Claim 1 by repeated water-washing from ash-producing ingredients, monomers, dimers and inulin oligomers of DP<10. This was far from being a direct and

unambiguous disclosure of the claimed inulin composition.

(ii) Moreover the different cooling conditions of the aqueous inulin extract applied according to annexes 1 (cooling rate of about 3°C/sec) and 2 (exposing to ambient temperature) could not be qualified as true repetitions of the teaching of A1 ("refroidir graduellement"; "a des temperatures s'étageant entre 40 et 10 degrés centigrades"); they rather proved that this teaching was not enabling.

(iii) The Appellant's contention that the results of annexes 1 and 2 showed that the cooling rate was not a critical parameter for the achievement of the claimed particle morphology was at variance with the Decap report A10 which established that the attainment of spherical crystals which provide good filterability was dependent on the cooling rate.

It was emphasised in that respect by the Respondent that the passage [0085] on page 9 of the patent specification limited the definition of the "inventive" inulin particles by restricting the standard deviation of the average particle diameter to a maximum of 25%.

(c) Concerning the evidential relevance of annexes 10 and 11 (alleged public prior use of chicory inulin

I-2255 from Sigma-Aldrich) the Respondent argued that several of the claimed features were undisclosed, *inter alia* the content of oligomers having a DP <10 and the morphological parameters. The Appellant's contention that the absence of the latter characteristics was a consequence of their disappearance on drying of the washed particles which must also occur on drying of the claimed particles was countered in a twofold way: firstly Claim 1 did not require that the inulin particles were dried, and secondly destruction of the morphological characteristics could be avoided by appropriate drying methods.

(d) With regard to the several allegations of public prior use the following was brought forward:

(d1) annexes 10 and 11 relating to the Sigma inulin I-2255 did not disclose all of the claimed features; in particular a disclosure of the content of oligomers having a DP <10 and of the morphological features was missing. As to the latter features, the Respondent submitted microphotographs of Sigma inulin I-2255 and I-3754 showing an irregular shape of the particles (documents B 12 and B13). Furthermore there was an inconsistency between the DP values to be calculated on the basis of the data in annexes 10 (DP 23) and 11 (DP 36) which cast doubt on the reliability of this evidence.

(d2) None of the various documents submitted by the Appellant in order to prove public prior use of Warcoing's inulin product Fibruline LC was

convincing. Furthermore it was established, in the Respondent's view, by the following documents (B2 to B7 filed with the submission dated 5 November 2002; B9 filed with the submission dated 13 April 2004) that Fibruline LC products which had been commercialised before and after the priority dates of the patent in suit did not match the purity- and DP-requirements of present Claim 1:

- (i) documents B2b to B2e (analysis data of Warcoing's Fibruline LC from 3 October 1994 (report B2b from L. De Leenheer); 1 December 1994 (report B2c from L. De Leenheer); 21 December 1995 (report B2d from ORAFI: "Fonctionnalité de RAFTILENE®ST/ST Gel/HP ('94/'95) et de Fibruline"); 23 February 1996 (internal report B2e from "SST"): these documents reported for Fibruline LC concentrations of monomeric, dimeric, oligomeric saccharides (DP <10) and of ash which were above those according to present Claim 1. Furthermore, the average DP was generally lower than double the DP of native inulin.
  
- (ii) documents B3a and B3b (two data sheets for Fibruline from Cosucra, B3a hand marked "Nov 1995"; B3b undated): both indicated a DP of "min 15" confirming the statement in the patent specification (page 2, lines 56 to 58) that the DP of Fibruline LC was "not appreciably higher than native chicory inulin".



- (iii) documents B4a and B4b (B4a: "die ernährungsindustrie" 6/94, pages 48 to 51; B4b: "Deutsche Milchwirtschaft" 22/1994, pages 1079 to 1080): both indicated an average DP of Fibruline LC of 16 and contents of low DP sugars which were higher than the claimed ones.
  
- (iv) documents B5a and B5b (B5a: two data sheets of Fibruline LC both carrying a facsimile date 19 November 1999; B5b: data sheet of Fibruline LC carrying a fax date 9 Okt. 2000): both indicated a DP of "min. 20".
  
- (v) document B6 (WO 96/03888; published 15 February 1996): refers on page 11, line 15 to Fibruline LC having a DP of 20 and 13 wt% GF<sub>1-4</sub>. [GF<sub>n</sub>: fructan molecule consisting of n fructofuranosyl units and containing one terminal glucose]; at the foot of page 11 document B6 refers to "a clear, unpleasant, somewhat sweet off-taste", which is "believed to be caused by the GF<sub>n=1-9</sub> molecules in the [Fibruline LC] inulin".
  
- (vi) document B7 ("Food Tech Europe October 1997, page 52): discloses that the chain length distribution of Fibruline LC comprises 5% GF<sub>2-4</sub> and 13% GF<sub>5-9</sub>, i.e. a total of 18% GF<sub>2-9</sub>.
  
- (vii) document B9 (notice and grounds (five pages) of opposition of G. Leherte against EP-B-0 773 722 submitted with Respondent's letter of 13 April 2004) disclosing that

Fibruline LC produced on 22, 25 and 30 October 1993 contained between 10.4 and 13.1% GF<sub>1-9</sub>/GF<sub>1-60</sub>.

- (e) The Respondent also rejected the Appellant's contention that, because of the vagueness of the terms "metastable solution", "directed crystallisation", "rapid cooling down" and "rapid concentration increase" - which in the Appellant's view should therefore not be taken into account for the assessment of novelty -, the disclosure of document A1 anticipated the subject-matter of process Claim 7. Contrastingly, these terms had a clear meaning by themselves and/or in relation to the information on page 9, line 12 to page 10, line 21 of the patent specification, which meaning was alien to the unspecified conditions (extraction and washing media, cooling rate) of the fractionated crystallisation set out in A1. Moreover A1 did not relate to the preparation of a single inulin fraction purified from low DP sugars but to the preparation of several different fractions.
- (f) From the afore-mentioned clear definition of the process features in the specification it also followed that no undue burden was necessary for the skilled person in order to reduce the teaching of the patent in suit into practice. The requirements of Article 83 EPC were therefore met.
- (g) The claimed subject-matter also involved an inventive step because nowhere in the cited documents was there a hint at inulin compositions

having the morphological, purity- and DP-related features of Claim 1 or at the process steps of Claim 7 which enabled the achievement of these properties by providing the specified morphology which then allowed the required efficient removal of monomers, dimers and oligomers having a DP <10 by washing with water. While it was true that annexes 6 and 8 disclosed the desirability of inulin products having a low content of sweetness caused by low DP sugars these annexes did not quantify this criterion and had to be interpreted therefore in the light of document B4a (page 48, middle column) according to which the longer chain (LC) Fibruline types referred to in these annexes had a much higher content of low sugar (glucose, fructose, saccharose) of 3%.

VII. The Appellant requested that the decision under appeal be set aside and the patent be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained on the basis of the amended claims and description maintained by the Opposition Division (main request) or alternatively on the basis of one of the five auxiliary requests submitted with the letter of 13 April 2004 but renumbered according to the letter of 4 May 2004.

## **Reasons for the Decision**

1. The appeal is admissible.

*Main request*

2. *Procedural matters*

2.1 In its letter of 5 November 2002 (page 1) the Respondent Patentee requested "the grant of a European Patent on the basis of the claims on which the Opposition Division decided to maintain the European patent".

In its letter dated 13 April 2004 (page 2) the request was modified to read "... to reject the present appeal and to maintain opposed patent EP 0 769 026 on the basis of the amended description and amended claims maintained by the Opposition Division, or alternatively on the basis of one of the sets of Claims filed as subsidiary request". Claim 1 of the main request attached to this letter was however different from Claim 1 on which the Opposition Division had decided to maintain the European patent. Notwithstanding that the amendment only concerned a formal rearrangement of the same features it was argued by the Appellant that it contravened Rule 57a EPC.

No objection was raised by the Appellant to the Respondent's consequential withdrawal of this amendment.

In the circumstances the Board admitted the formal reinstating as main request of the set of claims considered allowable by the Opposition Division.

2.2 In application of Article 114(1) EPC the evidence contained in annexes 1 to 9 is admitted for consideration because it is relevant with regard to Opposition Division's reasoning for maintaining the

patent in amended form and because it was submitted by the Appellant together with the Statement of Grounds of Appeal. The same applies to the evidence attached to the letter dated 6 February 2002 from Warcoing to M. Leherte) (cf. section V(b2) (ii) above) which had not be considered by the Opposition Division (cf. Minutes of the oral proceedings before the Opposition Division, page 3, last paragraph to page 4, line 4; decision under appeal, reasons 2.4, paragraphs 4 and 5 from end).

- 2.3 In application of Article 114(2) EPC the evidence contained in annexes 10 and 11 submitted with the letter dated 13 October 2003 as well as that submitted with the Appellant's letter dated 26 March 2004 (all pertaining to the alleged public prior use of Sigma inulin I-2255) is not admitted for consideration because it relates to new facts presented well into the appeal proceedings and is clearly not sufficiently relevant to be admitted at this late stage in the light of the principles set out in G 9/91 and G 10/91 (OJ EPO 1993, 408 and 420) as well as T 1002/92 (OJ EPO 1995, 605).

3. *Article 123(2) and (3) EPC*

No objection was raised by the Appellant against the conclusion in section 2.1 of the decision under appeal that the claims as amended met the requirements of Article 123(2) and (3) EPC.

4. *Novelty of the subject-matter of product Claim 1*

4.1 Document A1

4.1.1 The relevant passages of this document read:

"... Compte tenu de l'intérêt grandissant pour l'utilisation de fructosaccharides non caloriques et non cariogènes dans alimentation moderne, la S.A. Warcoing a maintenant mis au point un procédé qui consiste à faire suivre l'extraction et la purification de l'inuline d'une séparation de celle-ci en ses divers composants. Il s'agit de l'application d'une des techniques courantes de la physico-chimie industrielle classique : la séparation par cristallisation fractionnée.

Le procédé en question consiste à refroidir graduellement une solution d'inuline. A des températures s'étageant entre 40 et 10 degrés centigrades, comprenant un ensemencement ou non, selon le cas, ce sont d'abord les fructosaccharides les plus longs qui précipitent, les plus courts précipitant ensuite. La séparation des précipites se fait par centrifugation ou filtration, suivie d'un lavage. Cette technique permet la production de différentes fractions de saccharides."

4.1.2 It is evident that this disclosure, including the reference to "fructosaccharides non caloriques et non cariogènes" does not explicitly comprise any of the morphological, purity- and DP-related characteristics of the inulin compositions specified in Claim 1 of the patent in suit.

4.1.3 Nor does the reference in A1 to the classical method of fractionated crystallisation, followed by separation and washing of the precipitate amount to an implicit disclosure of all of the claimed characteristics. Most evidently this is the case for the washing method to be applied in order to remove remains of the mother lye from the precipitate and dissolve and wash off undesired low DP sugars because in that respect the only disclosure of A1 are the words "suivie d'un lavage".

The only information in A1 as to the desirability of the absence of low DP sugars is the reference to the enhanced interest in "fructosaccharides non caloriques et non cariogènes" which however does not contain any quantification.

In the light of the ample evidence on file this statement cannot be interpreted to relate to the extremely low amounts of monomers (<0,2%), dimers (<0,2%) and oligomers having a DP <10 (<1.5%) required according to present Claim 1. This *inter alia* results from information in:

- (a) document B4a (from 1994) which refers a maximum of 3% of residual amounts of "sugars" in Fibruline LC (said by the Appellant to anticipate the claimed inulin composition) and specifies a maximum of 1.6% for monomers (glucose + fructose) and 0.8% for the dimer saccharose (page 48, middle column and right hand column, Table 2);

- (b) document B4b (1994) which discloses maximum amounts of fructose, glucose and dimers in Fibruline LC of respectively, 1.2, 0.4 and 1.2%;
- (c) analyses of Fibruline LC samples (from October 1993) which are comprised by document B9 show ratios  $GF_{1-9}/GF_{1-60}$  of from 10.4 to 13.1%; and
- (d) document B6 (from August 1994) which discloses an amount of 13 wt%  $GF_{1-4}$  for Fibruline LC (page 11, line 15).

4.1.4 The disclosure of document A1 is therefore not novelty destroying for the subject-matter of present Claim 1 because the afore-mentioned evidence establishes that Fibruline LC commercialised around (before and after) the priority dates of the patent in suit did not exhibit the low monomer, dimer and oligomer (DP <10) content required by the claimed invention.

There is no need therefore to investigate whether the further features of Claim 1 (DP double that of native inulin; morphological properties) are met.

#### 4.2 Public prior use of Fibruline LC

The information contained in annexes 1 to 8 is unable to establish that Fibruline LC that had been commercialised before the priority dates of the patent in suit meets all the requirements of Claim 1 of the patent in suit:



- 4.2.1 From the several features which characterise the inulin compositions of Claim 1 annex 3 only relates to the feature relating to the average DP double that of native inulin.
- 4.2.2 The same applies to annex 4; the handwritten reports of production lots only contain data for the DP calculation (this was confirmed by the Appellant at the oral proceedings).
- 4.2.3 Annexes 5 and 7 relate to Fibruline LC offers but do not address its composition/constitution.
- 4.2.4 Annex 6 relates to long chain Fibruline LC which does not contain residual sweetness but is silent on any of its properties.
- 4.2.5 Similarly annex 8 only relates to long chain Fibruline which is safe for teeth, probably because of its lower low-DP sugar content.
- 4.2.6 Finally the analysis data attached to the letter dated 6 February 2002 from Warcoing to M. Leherte (cf. section V(b2)(ii) above) intended to show - by an alleged repetition of the inulin production process allegedly used by Warcoing in 1993 - that at that time Warcoing's inulin products had the characteristics according to present Claim 1, have no evidential weight because neither is there any objective evidence concerning Warcoing's process conditions of 1993, nor that inulin products prepared according to this process had been available to the public before the priority dates of the patent in suit.

4.2.7 Thus the Appellant has failed to establish that Fibruline LC that had been commercialised before the priority dates of the patent in suit meets the requirements of Claim 1 of the patent in suit.

5. *Sufficiency of the disclosure*

The gist of the claimed invention is the rapid achievement of a highly supersaturated aqueous inulin solution which leads to the precipitation of spherical particles whose shape allows easy separation of the precipitate from the mother lye and whose constitution is such that low DP species can effectively be removed by washing with water (page 8, line 54 to page 9, line 16 of the patent specification).

There is sufficient guidance in the specification as to how this principle may be reduced to practice by the skilled person not involving therefore undue burden (page 9, line 17 to page 10, line 21; Examples 1 to 3 on pages 14 to 15).

The patent therefore meets the requirements of Article 83 EPC (Article 100(b) EPC).

6. *Novelty of the subject-matter of process Claim 7*

6.1 The subject-matter of this claim is novel over A1 because this document, neither explicitly nor implicitly discloses the preparation of an inulin composition which possesses all the characteristics of Claim 1 which, by Claim 7's reference to the products of Claim 1, are comprised by Claim 7.

6.2 Even if arguably it was assumed that the cooling conditions, which are not specified in A1, did not qualify as distinguishing features, and that it was established by the "reworking experiments" of annexes 1 and 2 that inulin having a DP double that of native inulin could be prepared by cooling of an aqueous inulin extract, a disclosure would still be missing in A1 of the washing procedure to be performed in order to achieve the low content of monomers, dimers and oligomers having a DP <10 required by the reference in Claim 7 to the inulin composition according to Claim 1.

6.3 It is however apparent that the above suggested assumption cannot be upheld in the light of the scope to be attributed (Article 69(1) EPC) to the term in Claim 7 "rapid cooling down involving an important temperature modification" in view of the information in the description which defines a cooling rate of between 0.2 and 10°C/sec (page 9, lines 19 to 21) and in view of the available evidence.

In the light of this evidence, which points to the use of definitely slower cooling rates, the skilled person would not interpret A1 to encompass a cooling rate in the afore-mentioned range:

- according to the document "E. Berghofer, Inulin and Inulin containing crops, Ed. A. Fuchs, Elseviers Sc. Publ., page 77 (1993)" (cited on page 3, section [0015] of the patent specification) a cooling rate of 3°C/hour i.e. less than 0.001°C/sec was applied; and

- according to the Decap report A10 the fastest cooling rate considered was 25 min to a temperature of 8°C, i.e. 0.048°C/sec or 0.055°C/sec (depending on the starting temperature - which is not indicated in A10 - but can be supposed to lie in the customary range of 80° to 90°C).

## 7. *Obviousness*

7.1 The Appellant's argumentation focused on the alleged "apparent desirability" of an inulin composition having the purity and DP characteristics as defined in present Claim 1. In that respect it relied on the reasoning that it was obvious to attain these desirable characteristics by appropriately effective washing operations of inulin compositions manufactured according to the fractionated crystallisation method set out in document A1.

7.2 In the Board's judgment, this argumentation is not convincing because

- (a) the available evidence discussed in section 4.1.3 above demonstrates that the trend referred to in annexes 6 and 8 to long chain inulin compositions comprising no residual sweetness ("keine Restsüße") (annex 6) and being "safe for teeth" (annex 8) did not extend to inulin compositions whose content of monomers, dimers and oligomers having a DP <10 was as low as required by Claim 1,

- (b) the state of the art for the isolation of inulin from aqueous extracts does not suggest the "directed crystallisation" method specified in Claim 7 of the opposed patent (cf. section 6.3 above),
- (c) it is established by the data in the patent specification that the morphology and constitution of the so obtained inulin particles is essential for their easy filterability and the possibility of effective removal of residues of the mother lye and of low DP sugars by washing with water ("comparative" Examples 1 and 2; "inventive" Example 3), and
- (d) because of the unrefuted, *prima facie* convincing argument of the Patentee that rapid cooling is expected by the skilled person to cause the formation of small particles which hinder their smooth separation and effective purification (cf. page 8, lines 52 to 53 of the patent specification; Reasons 3.4, penultimate paragraph of the decision under appeal).

7.3 It follows that the characteristics of the inulin compositions according to present Claim 1 were not suggested by document A1 alone or in combination with the further available evidence and that the same conclusion applies to the process conditions laid down in Claim 7 of the patent in suit.

7.4 Having regard to the reciprocal relationship in the present case between the acknowledgement of inventive step for the process and for the product claim,

reference is made to the statement in T 595/90: "... a product which can be envisaged as such with all characteristics determining its identity together with its properties in use, i.e. an otherwise obvious entity, may become nevertheless non-obvious and claimable as such if there is no known way or applicable (analogy) method in the art to make it and the claimed methods for its preparation are therefore the first to achieve this in an inventive manner" (OJ EPO 1994, 695, Reasons 5, last paragraph).

The essence of this conclusion is also valid in the present case with the proviso that the "envisageability" of the inulin composition of present Claim 1 is purely hypothetical and has not been shown to correspond to an established wish in the art.

8. The allowability of the subject-matter of the independent Claims 1 and 7 entails the allowability of Claims 2 to 4 dependent thereon, of Claims 5 and 6 which relate to more specifically defined inulin compositions according to the previous claims, and of Claims 8 to 11 which are dependent on Claim 7.
9. The grounds of opposition do not prejudice therefore the maintenance of the opposed patent on the basis of the main request. There is thus no need to deal with the auxiliary requests.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar

The Chairman

G. Rauh

R. Young