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Datasheet for the decision of 15 January 2025

Case Number: T 0311/22 - 3.3.07

Application Number: 07007325.9

Publication Number: 1803443

IPC: A61K9/16, A61K31/465

Language of the proceedings: EN

Title of invention:
A method for the preparation of a nicotine-containing particulate material with a crystalline cellulose (in particular MCC)

Patent Proprietor:
NicoNovum AB

Opponents:
Philip Morris Products S.A.
Swedish Match North Europe AB

Headword:
Nicotine-containing particulate material / NICONOVUM

Relevant legal provisions:
RPBA 2020 Art. 12(4)
EPC Art. 114(2), 111(1) sentence 2, 76(1), 123(2), 56

Keyword:
Admittance of items of evidence - admissibly raised and maintained in the first instance proceedings (yes)
Admittance of arguments - Amendment to the case (no)
Amendments - extension beyond the content of the (earlier) application as filed - main request (yes), auxiliary request 2 (no)
Inventive step - reasonable expectation of success - auxiliary request 2 (no)

Decisions cited:
T 1912/10

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Case Number: T 0311/22 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 15 January 2025

Appellant: (Opponent 1)	Philip Morris Products S.A. Quai Jeanrenaud 3 2000 Neuchâtel (CH)
Representative:	HGF HGF Limited 1 City Walk Leeds LS11 9DX (GB)
Appellant: (Opponent 2)	Swedish Match North Europe AB Sveavägen 44 118 85 Stockholm (SE)
Representative:	Valea AB Box 1098 405 23 Göteborg (SE)
Respondent: (Patent Proprietor)	NicoNovum AB Järnvägsgatan 13 252 24 Helsingborg (SE)
Representative:	D Young & Co LLP 3 Noble Street London EC2V 7BQ (GB)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 8 December 2021 concerning maintenance of the European Patent No. 1803443 in amended form.**

Composition of the Board:

Chairman	A. Usuelli
Members:	J. Lécaillon
	L. Basterreix

Summary of Facts and Submissions

I. European patent 1 803 443 (hereinafter "the patent") was granted on the basis of 11 claims. The independent claims of the patent as granted read as follows:

"1. A nicotine-containing particulate material for release of nicotine, the material comprising a combination of nicotine or a pharmaceutically acceptable salt, complex or solvate thereof and a microcrystalline cellulose, the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof being retained inside voids in the microcrystalline cellulose, the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof having been introduced into the voids while being dissolved in a hydrophilic solvent, i.e. water or alcohol or mixtures thereof."

"9. A pharmaceutical composition comprising a particulate material as defined in any of claims 1-8".

II. Two oppositions were filed against the patent on the grounds that its subject-matter lacked novelty and inventive step, it was not sufficiently disclosed and it extended beyond the content of the (parent) application as originally filed.

III. The opposition division took the interlocutory decision that, on the basis of auxiliary request 2, the patent met the requirements of the EPC. This decision was based on the patent as granted (main request) and on auxiliary requests 1 to 2 filed on 21 August 2020. Auxiliary request 2 contained 10 claims. Claim 1 of auxiliary request 2 was identical to granted claim 1.

Granted dependent claim 5 was deleted and the numbering of the claims adapted. Moreover, the volume of "37°C phosphate buffer at pH 7.4" ("one liter") was introduced in the dependent claims corresponding to granted claims 5 and 6.

IV. The decision of the opposition division, posted on 8 December 2021, cited *inter alia* the following documents:

D1: US 5,362,496
D2: WO 00/35295 A1
D5: GB 2 193 092 A
D6: US 4,907,605
D8: US 5,939,100
D9: Ek *et al.*, International Journal of Pharmaceutics, 122, (1995), 49-56
D11: WO 95/03050 A2
D15: Technical Stability Investigation Protocol on TS-1511-01 nicotine adducts, 2015
D16: Franz *et al.*, Journal of Pharmaceutical Sciences, Vol. 71, No.11, November 1982
D17: Steele *et al.*, Drug Development and Industrial Pharmacy, Vol. 29, No. 4, pp. 475-487, 2003
D21: Experimental report from Niconovum

V. The opposition division decided in particular as follows:

(a) No decision regarding the admittance of D16 and D17 was required. D21 was admitted into the appeal proceedings.

(b) The subject-matter of claims 5 to 7 of the main request and of corresponding claims 5 and 6 of

auxiliary request 1 did not meet the requirements of Articles 123(2) and 76(1) EPC.

(c) Auxiliary request 2 overcame the objections raised under Articles 123(2) and 76(1) EPC for the previous requests.

(d) The subject-matter of the claims of auxiliary request 2 was novel.

(e) Auxiliary request 2 met the requirement of Article 56 EPC starting from the closest prior art D1.

VI. Opponents 1 and 2 (appellants 1 and 2) lodged an appeal against the above decision of the opposition division.

VII. With its reply to the appellants' statement setting out the grounds of appeal the patent proprietor (respondent) defended its case on the basis of a new main request and on the basis of auxiliary requests 1 2, 2a, 3 to 5, 5a, 6, 6a, 7, 7a and 8 to 13 filed therewith. The main request and auxiliary requests 1 to 11 corresponded to auxiliary requests 2 to 13 filed during the first instance proceedings. During oral proceedings, the respondent withdrew auxiliary request 1.

VIII. The content of the claims upon which the present decision is based can be illustrated as follows:

The main request corresponded to auxiliary request 2 maintained by the opposition division (see item III.).

Auxiliary request 2 corresponded to the main request wherein the feature "and the solvent having been removed" was introduced at the end of claim 1.

IX. Oral proceedings were held before the Board on 15 January 2025 using videoconference technology.

X. Appellant 1 and appellant 2 requested that the decision under appeal be set aside and the patent be revoked.

Appellant 2 further requested in writing that the request of the respondent not to admit D16, D17 and the inventive step objection of appellant 2 into the appeal proceedings not be allowed.

XI. The respondent requested that the appeal be dismissed, *i.e.* that the patent be maintained as amended during the first instance proceedings (main request), or that the patent be maintained on the basis of one of the auxiliary requests 2, 2a, 3 to 5, 6, 6a, 7, 7a and 8 to 13 submitted with the reply to the statement setting out the grounds of appeal.

The respondent further requested that D16 and D17 not be admitted and that the following arguments of the appellants not be admitted:

- the inventive step objection of appellant 2,
- the inventive step objection of appellant 1 against auxiliary request 2, in particular the following arguments:
  - the argument based on the passage on column 17 of D1, and
  - the argument regarding the use of MCC in rapid release compositions in D2 based on example HH.

XII. The arguments of the appellants, as far as relevant for the present decision, can be summarised as follows:

(a) Claim 1 of the main request did not fulfil the requirements of Articles 76(1) and 123(2) EPC.

Both appellants considered that the original (parent) descriptions only disclosed a process of preparation of a particulate material containing nicotine retained inside the voids of microcrystalline cellulose (MCC) which encompassed a solvent removal step. The omission of this process step in the product-by-process feature of claim 1 of the main request hence infringed Articles 76(1) and 123(2) EPC.

Furthermore, appellant 1 considered that the omission of the nicotine release profile which represented an essential feature of the product extended the subject-matter claimed beyond the disclosure of the original (parent) applications.

Finally, appellant 1 considered that the method of measurement of the *in vitro* dissolution profile recited in claims 5 and 6 of the main request was not originally disclosed in combination with the claimed *in vitro* dissolution profiles so that also claims 5 and 6 infringed Articles 76(1) and 123(2) EPC.

(b) D16 and D17 were to be admitted into the appeal proceedings because they were *prima facie* relevant and had been filed and maintained during the first instance proceedings.

(c) The arguments provided by the appellants in their inventive step objections had either already been raised or represented further developments of

already raised objections and were therefore to be admitted.

(d) Starting from example 32 of D1, which represented the closest prior art, the distinguishing feature was the distribution of nicotine in the MCC containing carrier resulting from its introduction in solution and subsequent solvent removal. According to appellant 2, D15 and D21 did not support any improved technical effect compared to the closest prior art. Hence, appellant 2 considered that the objective technical problem resided in the provision of an alternative composition for the delivery of nicotine. During oral proceedings, appellant 1 considered that the objective technical problem could be formulated as in the preliminary opinion of the Board, namely as the provision of an alternative nicotine containing particulate material having improved storage stability. Both appellants considered that the present solution was obvious in light of D1 combined with D2, D9, D16 or D17, which suggested to introduce nicotine in the form of a solution to improve drug loading within MCC and hence nicotine stability. Appellant 2 additionally mentioned D5, D6 or D8 as combination documents, since they would disclose the introduction of nicotine in solubilised form onto inert carriers. As a result, the subject-matter of claim 1 of auxiliary request 2 did not involve an inventive step.

XIII. The arguments of the respondent, as far as relevant for the present decision, can be summarised as follows:

(a) Claim 1 of the main request fulfilled the requirements of Articles 76(1) and 123(2) EPC.

The solvent removal step of the process disclosed in the original (parent) descriptions was not an essential step for the preparation of a particulate material containing nicotine retained inside the voids of microcrystalline cellulose (MCC). This step could therefore be omitted in the claim without infringing Articles 76(1) and 123(2) EPC.

Similarly, it was apparent from the original (parent) disclosure that the nicotine release profile was neither inextricably linked nor essential to the particulate material of the invention. There was hence no requirement to include any specific release profile in claim 1 of the main request.

Finally, claims 5 and 6 of the main request also met the requirements of Articles 76(1) and 123(2) EPC. It was indeed directly and unambiguously derivable form the original (parent) applications that the described method of measurement of the *in vitro* dissolution profile represented a standard measurement equally applicable to any material encompassed by the claims.

(b) D16 and D17 should not be admitted into the appeal proceedings. These documents were filed late during the first instance proceedings and were not *prima facie* relevant. Moreover the appellants did not refer to these documents during the oral proceedings in first instance, so that they had been abandoned.

(c) The inventive step objection against the main request raised by appellant 2 and the objection of

lack of inventive step of appellant 1 against auxiliary request 2, in particular the following arguments, should not be admitted into the appeal proceedings because they represented amendments to the appellants' case and their admittance had not been substantiated:

(i) the argument based on the passage on column 17 of D1, and

(ii) the argument regarding the use of MCC in rapid release compositions in D2 based on example HH.

(d) Starting from example 32 of D1, which represented the closest prior art, the distinguishing feature was the distribution of nicotine in the MCC containing carrier resulting from its introduction in solution and subsequent solvent removal. As substantiated *inter alia* in the patent, D15 and D21, the claimed product had increased nicotine storage stability while maintaining rapid release of nicotine. Hence, the objective technical problem resided in the provision of a nicotine-containing material having improved stability whilst still at least maintaining a rapid release of the nicotine from the material. None of the cited prior art documents suggested to prepare a particulate material containing nicotine retained inside MCC voids wherein nicotine had been introduced whilst being in form of a solution and wherein the solvent had been subsequently removed to solve this problem. As a result, the subject-matter of claim 1 of auxiliary request 2 involved an inventive step.

Reasons for the Decision

Main request

1. Amendments

1.1 The patent was filed as a divisional application of the earlier European patent application No. 03 789 400 (parent application) published as W0 2004/056363. The appellants raised several objections of added subject-matter under Articles 76(1) and/or 123(2) EPC.

1.2 In line with the submissions of the parties, the following considerations refer to the disclosure of the presently claimed subject-matter in the original parent application (Article 76(1) EPC). It was undisputed that the original descriptions of the parent and present applications are identical. Hence, the following considerations, which are based on the description of the original parent application, apply *mutatis mutandis* for the disclosure of the presently claimed subject-matter in the original application (Article 123(2) EPC).

1.3 Claim 1

1.3.1 Present claim 1 of the main request relates to

(a) "a nicotine-containing particulate material for release of nicotine, the material comprising a combination of nicotine or a pharmaceutically acceptable salt, complex or solvate thereof and a microcrystalline cellulose,"

(b) "the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof being retained inside voids in the microcrystalline cellulose,"

(c) "the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof having been introduced into the voids while being dissolved in a hydrophilic solvent, *i.e.* water or alcohol or mixtures thereof."

1.3.2 It was uncontested that, as stated in the impugned decision (see page 27, 3rd full paragraph), a nicotine containing particulate material for release of nicotine, the material comprising a combination of nicotine or a pharmaceutically acceptable salt, complex or solvate thereof and a microcrystalline cellulose (above feature (a)) is generally disclosed on page 1 lines 6 to 8 together with page 2 lines 20 to 23 of the original parent application.

1.3.3 It was undisputed that the introduction of nicotine into the voids of MCC while being dissolved in a hydrophilic solvent, *i.e.* water or alcohol or mixtures thereof (above feature (c)) to obtain "a particulate material according to the present invention" is disclosed on page 6 lines 15 to 18 of the original parent application.

1.3.4 However, it was disputed whether the original parent application taken as a whole directly and unambiguously disclosed a nicotine-containing particulate material (i) independently of any specific nicotine release profile and (ii) wherein nicotine was retained inside the voids of MCC (above feature (b)) after having been introduced in dissolved form (above feature (c)) without a solvent removal step.

Nicotine release profile

1.3.5 Regarding point (i), appellant 1 considered that there was no disclosure in the original parent application of a nicotine-containing particulate material according to the invention which would not be defined by the *in vitro* dissolution profile defined in claim 1 of the original parent application. According to appellant 1 the description of the invention in the original parent application would include the requirement of said specific dissolution profile as an essential feature of the claimed product (see page 2 line 31 to page 3 line 2 and page 1 line 16).

1.3.6 This argument is not convincing.

The passage on page 1 cited by appellant 1 refers to nicotine plasma profiles, which differ from *in vitro* nicotine dissolution profiles of the particulate material even if they may be partially conditioned thereupon.

The passage on pages 2 to 3 cited by appellant 1 defines merely "one aspect" of the invention, which cannot be seen as a limiting feature of the claimed product. Moreover this passage immediately follows a more general passage (see page 2 lines 20 to 29) mentioning a nicotine release defined merely in relative terms ("fast" or "very fast and complete"), *i.e.* which does not define any specific *in vitro* dissolution profile for the particulate material.

Hence the original parent application when taken as a whole does not define any specific *in vitro* dissolution profile as an essential feature of the nicotine containing particulate material.

Solvent removal step

1.3.7 Concerning point (ii), the Board observes that the sole passage of the original parent application disclosing a method for the introduction and subsequent retention of nicotine inside the voids of MCC is on page 6 lines 15 to 20. As argued by the appellants, this passage specifies that "after removal of the solvent nicotine is retained inside said voids until a suitable solvent again enters the voids and releases the nicotine into said solvent". This passage renders the retention of nicotine introduced in dissolved form conditional upon, *i.e.* inextricably linked to, the removal of the hydrophilic solvent. In the Board's view the reference in this passage to "the above-mentioned theory" and hence to the previous paragraph mentioning nicotine being entrapped and/or weekly bonded inside the voids does not change this reading. As argued by the appellants, this is further confirmed by the fact that a drying step is performed in all the examples of the original parent application.

1.3.8 In this context the respondent argued that several passages of the original parent application (namely page 1 lines 6 to 8, page 2 lines 14 to 16, page 5 lines 32 to page 6 line 2, page 6 lines 10 to 13 and page 10 lines 1 to 3) referred to a particulate material wherein nicotine was retained inside the voids without mentioning any solvent removal.

However the Board observes that these passages are not concerned with the method of preparation of the material but its final properties. As a consequence, most of the passages do not even mention the dissolution of nicotine in an hydrophilic solvent. The

absence of indication regarding the removal of the solvent in these passages cannot be interpreted as disclosing a material wherein nicotine is retained inside the voids of MCC without any solvent removal, in contradiction to the teaching of the passage on page 6 lines 15 to 20.

1.3.9 Moreover, the considerations brought forward by the respondent regarding the chemically and physically feasible retention of nicotine even in presence of solvent are not relevant when assessing the issue of added subject-matter in the present case. According to the gold standard, the relevant question is solely whether the claimed subject-matter is directly and unambiguously derivable from the original parent application. For the reasons detailed above, the original parent application only teaches a process wherein nicotine retention is achieved by a process encompassing solvent removal.

1.3.10 Finally, even if it was considered that solvent removal would not be necessarily required for nicotine to be retained inside the MCC voids according to the original application, it remains that present claim 1 limits the claimed product by defining it in terms of its process of preparation. The sole process originally disclosed is the one of page 6 lines 15-20 of the original parent application. This process unambiguously encompasses two steps, both of which will have an impact on the final product. Hence, the definition in the present claim in terms of a product-by-process has to include the entire process described in the original parent application. Omitting one step thereof will inevitably result in the definition of products not originally disclosed *per se*.

1.3.11 Accordingly, claim 1 of the main request does not comply with the requirements of Articles 76(1) and 123(2) EPC.

1.4 Claims 5 and 6

1.4.1 Appellant 1 raised an objection of added subject-matter for dependent claims 5 and 6 in connection with the method of measurement of the *in vitro* dissolution profile. According to appellant 1 the method of measurement of the *in vitro* dissolution profile as recited in said claims was disclosed on page 2 lines 27 to 29 and page 10 lines 3 to 6 of the original parent application only in combination with specific release rates. However, these releases rates differed from those claimed in present claims 5 and 6. The method recited in present claims 5 and 6 would thus not be originally disclosed in combination with the claimed *in vitro* dissolution profiles.

1.4.2 This argument is not convincing. As argued by the respondent, the skilled person would recognise the method disclosed on pages 2 and 10 as a standardised method equally applicable to any material described or claimed in the application. This is made clear *inter alia* by the reference to the USP apparatus and by the fact that this method is the sole described in the original parent application and applied in the various examples (see Table 3). Furthermore, since the dissolution profile is the actual parameter being measured, it would not make sense to render the method of measurement dependent thereupon.

1.4.3 The Board considers therefore that the objection of appellant 1 of lack of compliance of claims 5 and 6 of

the main request with the requirement of Articles 76(1) and 123(2) EPC is not convincing.

Auxiliary request 2

2. Claim 1 of auxiliary request 2 reads as follows:

"1. A nicotine-containing particulate material for release of nicotine, the materialcomprising a combination of nicotine or a pharmaceutically acceptable salt, complex or solvate thereof and a microcrystalline cellulose, the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof being retained inside voids in the microcrystalline cellulose, the nicotine or the pharmaceutically acceptable salt, complex or solvate thereof having been introduced into the voids while being dissolved in a hydrophilic solvent, i.e. water or alcohol or mixtures thereof, and the solvent having been removed."

3. Amendments

The appellants did not raise any objection of lack of compliance with Articles 76(1), 123(2) and 123(3) EPC for auxiliary request 2. The Board is satisfied that the limitation of the process feature of claim 1 so as to include a solvent removal step overcomes the lack of compliance with Articles 76(1) and 123(2) EPC of claim 1 the main request and that the dependent claims meet the requirements of Articles 76(1) and 123(2) EPC. Moreover, this amendment further restricts the scope of protection (Article 123(3) EPC).

4. Sufficiency of disclosure and novelty

The appellants have not challenged the conclusion of the opposition division that insufficiency of disclosure did not constitute a ground of opposition in the present case.

Furthermore, the appellants did not raise any objection of lack of compliance with Article 54 EPC for auxiliary request 2. The Board agrees that the requirement of Article 54 EPC is fulfilled.

5. Inventive step

5.1 Admittance of items of evidence D16 and D17

5.1.1 D16 and D17 were filed by appellant 2 (then opponent 2) during the fist instance proceedings.

5.1.2 The impugned decision explicitly stated that the admissibility of D16 and D17 was "not further examined" (see point 32 last paragraph of the decision), *i.e.* no decision on their admittance was taken and the impugned decision was not based thereupon. It follows that these documents do not form part of the appeal proceedings according to Article 12(2) RPBA unless appellant 2 demonstrates that they have been admissibly raised and maintained during the first instance proceedings (Article 12(4) RPBA).

5.1.3 It therefore has first to be assessed whether D16 and D17 were admissibly filed during the first instance proceedings according to Article 114(2) EPC (Article 111(1), 2nd sentence, 1st part).

The Board observes that D16 and D17 were filed during the first instance proceedings after the 9-months period according to Article 99(1) EPC but within the first time period according to Rule 116(1) EPC. These documents both aim at studying the mechanisms involved in the adsorption of drugs from aqueous solutions onto MCC. While, as argued by the respondent, they relate to different drugs than nicotine and potentially different release profiles than in the present patent, the Board considers that the properties of MCC involved in the studied adsorption mechanisms are potentially *prima facie* relevant for the present case despite the use of a different drug and a different release profile (*i.e.* desorption mechanism). As a result, the Board considers that D16 and D17 were admissibly raised in the first instance proceedings.

5.1.4 The respondent further disputed that D16 and D17 had been maintained during the first instance proceedings. According to the respondent, these documents had not been referred to by the appellants (then opponents) during the oral proceedings of the first instance proceedings (see minutes of the oral proceedings, item 3. and impugned decision page 25 item 32.). In the respondent's view D16 and D17 had not been actively maintained and hence implicitly abandoned.

As argued by appellant 1 during oral proceedings, there is no evidence that the arguments of the appellants (then opponents) based on D16 and D17 were abandoned during the first instance proceedings. Said arguments were indeed part of the summary of the parties' arguments in the impugned decision (see page 11, starting from the third full paragraph). As a result, the Board considers that D16 and D17 were maintained during the first instance proceedings.

5.1.5 Hence, documents D16 and D17 are part of the appeal proceedings (Article 12(4) RPBA).

5.2 Admittance of objections and arguments

5.2.1 During the oral proceedings, the respondent requested that the objection of lack of inventive step of appellant 1, in particular the following arguments not be admitted into the appeal proceedings according to Article 13(2) RPBA because they had not been raised earlier and hence represented unsubstantiated amendments to appellant 1's case:

(a) the argument based on the passage on column 17 of D1, and

(b) the argument regarding the use of MCC in rapid release compositions in D2 based on example HH.

The arguments of appellant 1 regarding inventive step of claim 1 of auxiliary request 9 were limited to those raised against claim 1 of the main request. As argued by appellant 1, the content of the passage on column 17 of D1 had already been brought forward by appellant 2 in its notice of opposition by reference to the same content in D11, WO 95/03050 (see final paragraph of appellant 2's submission dated 31 July 2019 with reference to page 10 of "D3" which is WO 95/03050). As also argued by appellant 1, the argument based on D2, in particular example HH, constitutes a further development of an argument already discussed by the parties and identified in the preliminary opinion of the Board as a point of discussion for the oral proceedings (see item 7.5.2 of the preliminary opinion)

regarding the issue of whether D2 would provide a teaching away from a rapid release or not.

The Board therefore considers that these arguments do not represent amendments to the case of appellant 1 (Article 12(4) RPBA) and are therefore admitted into the appeal proceedings.

5.2.2 Furthermore, during the written proceedings, the respondent requested that the inventive step objection against the main request raised by appellant 2 not be admitted into the appeal proceedings.

As indicated in the preliminary opinion (see item 7.1), these arguments are taken into account in so far as they apply to auxiliary request 2, since they had already been submitted and maintained during the first instance proceedings and do thus not constitute amendments to appellant 2's case according to Article 12(4) RPBA.

5.3 Closest prior art and distinguishing feature

5.3.1 In the appeal proceedings, all the parties considered example 32 of D1 as the closest prior art. This example describes the process of preparation of a nicotine sublingual tablet. Avicel PH 101 (an MCC) and Aerosil 200 (a colloidal silica) are first blended. Nicotine free base is then "adsorbed" onto the obtained Avicel / Aerosil blend, which "acts as a carrier", by means of a mixing process in a mortar without any aqueous solvent that results in a homogeneous dispersion (see column 33 last paragraph). This dispersion is then further processed with further excipients to the final tablet.

5.3.2 It was furthermore undisputed that the product of claim 1 of auxiliary request 2 differs from the one of example 32 of D1 in the distribution of nicotine in the MCC containing carrier. The retention of nicotine inside the voids of the MCC containing carrier obtainable as a result of the process defined in present claim 1 including the use of aqueous solvents is indeed not unambiguously disclosed in D1.

5.4 Associated technical effect

5.4.1 The respondent argued that the claimed product would have increased nicotine storage stability while maintaining rapid release of nicotine as substantiated by the results provided in the patent and in *inter alia* D15 and D21.

5.4.2 Regarding storage stability, this property was already described for material according to the invention in the original application (see Table 1). Furthermore, as argued by the respondent, D15 substantiates an improved storage stability for products obtained by introducing nicotine dissolved in a hydrophilic solvent compared to in the absence of any solvent (compare samples 90900-1511-10 and 90900-1511-09 in Tables 6 and 7). The fact that, as argued by appellant 2, the comparative sample in D15 is not a true repetition of the example of D1 is not deleterious. The effect has indeed been substantiated for the identified distinguishing feature, which is the sole difference between samples 90900-1511-09 and 90900-1511-10. A similar trend is observed in D21 (compare samples A-1 and B-1 or A-2 and B-2).

5.4.3 According to the appellants, rapid release of nicotine could not be taken into account for the formulation of

the technical problem due to the absence of a comparison to a product according to example 32 of D1.

The Board observes that, as indicated by the respondent, the effect relied upon does not consist in an improvement over the closest prior art product. The results provided in the granted patent (see paragraphs [0074] to [0076] and Table 3) do indeed not provide any comparison with a product according to example 32 of D1. However they substantiate that products according to the claims have a rapid *in vitro* nicotine dissolution profile (*i.e.* over 90% w/w within 10 minutes). However, D1 also provides a fast nicotine release (see Figure 2 of D1). Therefore with regard to nicotine release, an effect of the same order as in the closest prior art, *i.e.* an alternative, has been substantiated.

5.5 Objective technical problem

In view of the above considerations, the objective technical problem resides in the provision of an alternative nicotine containing particulate material having improved storage stability.

5.6 Obviousness

5.6.1 The Board observes that neither D1 nor the prior art documents used by the appellants as combination documents (*i.e.* D2, D5, D6, D8, D9, D16 and D17) provide any explicit hint towards improvement of storage stability of a nicotine containing MCC particulate material, in particular while maintaining fast nicotine release.

D1

5.6.2 During oral proceedings, appellant 1 argued that D1 itself provided a hint to improved storage stability since it provided the teaching that MCC as absorbent could reduce the volatility of nicotine (see columns 17-18) and volatility was a key factor to storage stability as stated in the patent (see paragraphs [0072] to [0073] and [0021]).

5.6.3 This argument is however not convincing because:

(a) D1 describes several absorbents being capable of reducing the volatility of nicotine including MCC among many other examples, and

(b) this teaching does not point to the retention of nicotine inside the MCC voids nor to the introduction of nicotine in a dissolved form.

D5, D6, D8

5.6.4 Documents D5, D6 and D8 cited by appellant 2 do not even relate specifically to MCC as carrier (D5, page 1 lines 50 to 55, concerns synthetic silica; D6, column 2 lines 14-23, mentions cellulose derivatives such as cellulose acetate; D8, column 4 lines 1-2, relates to starch) and cannot thus provide any pointer to the claimed solution.

D2

5.6.5 The appellants also argued that the claimed subject-matter would be obvious in view of D1 in combination with D2. D2 describes chewing gum products containing active ingredients including nicotine (see list of

examples of active ingredients on *e.g.* page 7 last paragraph). According to the general preparation procedure, the active ingredient is added to the carrier material in the form of a solution in water or other solvents such as ethanol (see paragraph bridging pages 15 and 16).

According to appellant 1, D2 would teach that encapsulation of the active ingredient improves stability of the active agent (see page 2 lines 11 to 12). Furthermore, the absorption according to D2 would lead to encapsulation *i.e.* entrapment:
- according to page 15 lines 16 to 18 the active ingredient absorbed onto a porous component becomes entrapped in the matrix thereof, and
- according to the last paragraph of page 16 absorption provides encapsulation.

Moreover, appellant 1 argued that, contrary to the opinion of the respondent, D2 and its purpose of reducing bitterness did not teach away from a fast release. According to appellant 1, D2 related to both fast and delayed releases (see page 3 lines 26 to 27) and MCC was not mentioned in the list of slow release carrier on page 15 while cellulose materials were listed amongst fast release materials (see page 13 lines 20 to 31 and page 14 starting from line 24) and used in examples reducing bitterness (see examples M and N page 40). MCC itself was used in example HH (see page 43).

5.6.6 These arguments do however not convincingly lead to the conclusion that the skilled person would have modified the preparation of the nicotine product of D1 by using the general method of D2 with the reasonable

expectation of success in improving nicotine storage stability and maintaining rapid release.

The Board first considers that, even if there is no outright teaching away from rapid release in D2, it remains that the skilled person would only combine documents which appear compatible. In the present case, as brought forward by the respondent, D2 is primarily concerned with caffeine containing chewing gum and the reduction of bitterness, including by delaying the release of the agent until it enters the digestive track (see page 2 lines 17 to 21). In contrast D1 concerns rapid release of nicotine by transmucosal administration. The Board is therefore not convinced that the skilled person would have combined the teachings of D1 and D2.

Furthermore, even if the skilled person would have taken D2 into consideration, the passage on page 2 of D2 mentioning improved stability relates to "various methods of encapsulation" and does not specifically concern nicotine, let alone absorption onto MCC and retention of nicotine inside MCC voids. Moreover, the further passages mentioned by appellant 1 (see pages 13 and 14 and examples M and N) relate to various (cellulose) materials but not specifically to MCC, let alone absorption.

The sole passage of D2 involving MCC is example HH. This example concerns reduction of the bitterness of caffeine by absorption onto MCC. It does not contain nicotine. Furthermore no information regarding the storage stability and release of the agent in example HH is provided. Appellant 1 concluded that the release should be rapid due to the list of agents on page 13, line 30. However this list relates exclusively to

cellulose derivatives and not to MCC. Moreover this passage on page 13 concern encapsulation in general and not specifically absorption. In contrast, as argued by the respondent during oral proceedings, it is specified on page 15 of D2, when describing absorption (including the general preparation method) that all materials used to absorb the active agent "result in a delayed release of caffeine or other active agent" (see lines 16 to 22).

It follows that, contrary to the opinion of appellant 1, there is no disclosure in D2 that absorption of an active agent onto MCC following the general method described on pages 15-16 (active agent added in form of a solution and subsequent solvent removal) would indeed improve storage stability and at the same time maintain rapid release.

D9

5.6.7 A further argument of the appellants was based on D9. According to the appellants, it would be known from D9 that drugs can be applied as aqueous or alcoholic solutions to porous cellulose beads (see Abstract). They explained that D9 explicitly states that the pore size and porosity of cellulose beads increase due to swelling upon contact with water so that drug loading can be increased (see Figure 3 and paragraph "4. Conclusion" of D9). In the appellants' view, the skilled person would therefore understand that absorption can be increased by adding nicotine in the form of an aqueous solution to MCC. Since D1 would already teach that increased absorption results in increased stability, appellant 1 concludes that it would have appeared obvious to the skilled person to modify the preparation method of D1 by adding nicotine

in the form of an aqueous solution in order to improve storage stability.

5.6.8 This argument is not convincing.

D9 is a scientific study of the pores size of porous cellulose beads upon swelling in different solvents. As argued by the respondent, these beads are specific products obtained from MCC via specific processes (see page 50, right column) so that the observed results cannot be with certainty extrapolated to MCC in general. Furthermore, as underlined by the respondent, the introduction of D9 refers to sustained drug release (see page 49, first paragraph below "Introduction").

The Board therefore considers that the skilled person would not have combined this teaching with the one of D1, and would in any case not have had any reasonable expectation of success of achieving the present effects when modifying the method of preparation of the product of D1 accordingly, in particular the maintenance of a rapid release.

D16 and D17

5.6.9 The appellants also referred to D16 and D17. In their view, these documents described the importance of an aqueous environment for adsorption of model drugs onto MCC through ion exchange (see D16, pages 1196 to 1197 "Effect of pH on Adsorption" and page 1198 penultimate paragraph, last sentence and last paragraph; D17, page 476 right column, second full paragraph, page 485 penultimate paragraph). According to the appellants, the skilled person would therefore have been motivated to modify D1 by applying nicotine in aqueous solution.

5.6.10 The Board disagrees.

As argued by the respondent, although D16 and D17 refer to amine drugs as "model drugs", differences are nevertheless observed between the drugs used (see *e.g.* D16, Table IV and D17, page 482 right column, first full paragraph and page 483, left column, last paragraph). It is therefore questionable whether the skilled person would necessarily have expected the same results for nicotine.

Furthermore, D16 and D17 specify that the release occurs in the gastrointestinal tract (*i.e.* the release is delayed), see D16, page 1198, right column, last paragraph and D17, page 482, right column, second full paragraph.

The Board therefore considers that the skilled person would not have combined these teachings with the one of D1, and would in any case not have had any reasonable expectation of success of achieving the present effects when modifying the method of preparation of the product of D1 accordingly, in particular the maintenance of a rapid release.

T 1912/10

5.6.11 Finally, the appellants referred to the decision T 1912/10 relating to the patent originating from the parent application. The Board observes that, as indicated by the respondent, the facts underlying the present case and the one of T 1912/10 are not entirely identical. In particular additional experimental data have been provided in the present case (see in particular D15 and D21). It follows that the conclusion reached in this earlier decision on the parent

application does not necessarily apply to the present case.

5.7 As a result, the subject-matter of the claims of auxiliary request 2 meets the requirement of inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The decision under appeal is set aside.

The case is remitted to the opposition division with the order to maintain a patent on the basis of the claims of auxiliary request 2 filed with the reply to the grounds of appeal and a description to be adapted thereto.

The Registrar: The Chairman:

B. Atienza Vivancos A. Usuelli

Decision electronically authenticated