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Datasheet for the decision of 10 July 2026

Case Number: T 1400/24 - 3.3.07

Application Number: 17849426.6

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Language of the proceedings: EN

Title of invention:
FORMULATIONS OF (R)-2-AMINO-3-PHENYLPROPYL CARBAMATE

Patent Proprietor:
Axsome Malta Ltd.

Opponent:
SANDOZ AG

Headword:
Solriamfetol formulation/AXSOME

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - reasonable expectation of success (no)

Decisions cited:
T 2168/11, T 0254/86, T 1442/18, T 0728/18, T 1194/00, T 1287/14, T 0823/96, T 0526/21, T 0722/24, T 2342/19

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Case Number: T 1400/24 - 3.3.07

D E C I S I O N
of Technical Board of Appeal 3.3.07
of 10 July 2026

Appellant: (Opponent)	SANDOZ AG Centralbahnstrasse 4 4051 Basel (CH)
Representative:	Kraus & Lederer PartGmbB Thomas-Wimmer-Ring 15 80539 München (DE)
Respondent: (Patent Proprietor)	Axsome Malta Ltd. Pinto Business Centre, Level 4, Office 4 Mill Street Qormi QRM 3104 (MT)
Representative:	Carpmaels & Ransford LLP One Southampton Row London WC1B 5HA (GB)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted/electronically transmitted on 30 October 2024 rejecting the opposition filed against European patent No. 3509581 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	A. Usuelli
Members:	M. Steendijk
	S. Ruhwinkel

Summary of Facts and Submissions

I. European patent 3 509 581 ("the patent") was granted with thirteen claims.

Independent claim 1 as granted defines:

"An immediate release compressed tablet for oral delivery of (R)-2-amino-3-phenylpropyl carbamate, the tablet comprising:

(R)-2-amino-3-phenylpropyl carbamate or a pharmaceutically acceptable salt thereof in an amount of about 90-98% by weight of the tablet;

at least one binder in an amount of about 1-5% by weight of the tablet; and

at least one lubricant in an amount of about 0.1-1.4% by weight of the tablet;

wherein the tablet releases at least 85% of the (R)-2-amino-3-phenylpropyl carbamate or a pharmaceutically acceptable salt thereof contained therein within a period of less than 15 minutes after administration of the tablet to a subject;

wherein the at least one binder is selected from at least one of hydroxypropyl cellulose, hydroxypropyl methylcellulose, and povidone; and

wherein the at least one lubricant is selected from at least one of magnesium stearate, calcium stearate, and sodium stearyl fumarate;

wherein the term "about", when used to refer to an amount, encompasses variations of ± 10%, ± 5%, ± 1%, ± 0.5%, or ± 0.1% of the specified amount."

The compound (R)-2-amino-3-phenylpropyl carbamate has been referred to as solriamfetol in the decision under appeal and has also been known under the name ADX-N05 (see D1, paragraph [0009]).

II. The grant of the patent was opposed on the grounds that its subject-matter lacked an inventive step.

The opposition division decided to reject the opposition. The opponent filed an appeal against this decision.

The following documents were *inter alia* cited during the proceedings before the opposition division:

D1: US 2014/275244 A1
D2: WO 2006/133393 A1
D3: US 2011/111027 A1
D6: “Pharmaceutics - The Science of Dosage Form Design", Aulton, M.E., 2nd edition, 2002, pages 1-12, 122 and 404-410
D7: Nature and Science of Sleep (2015), 7, 51-61
D8: Expert Opinion on Emerging Drugs (2015) 20(4), 571-582
D12: "The Theory and Practice of Industrial Pharmacy", Lachman, L et al., 3rd edition, 1987, pages 393-394
D13: Pharmacy World & Science, (2001), 23(5), 185-188
D14: “Capsule sizing information” from the website “Capsule connection” as archived by the Wayback Machine (Internet Archive) on 8 May 2016

D15: "Handbook of pharmaceutical excipients", Rowe, R.C. et al., 6th edition, 2009, pages 317-322.

The opposition division arrived at the following conclusions:

(a) Documents D13-D15 were admitted into the proceedings.

(b) Claim 1 of the granted patent related to an immediate release compressed tablet for oral delivery of (R)-2-amino-3-phenylpropyl carbamate (solriamfetol).

Example 1 of document D1 represented the closest prior art, because it related to a concrete oral dosage form for solriamfetol in the form of a capsule and referred to this dosage form in human clinical trials.

The differences between the subject-matter of granted claim 1 and the capsule of Example 1 in document D1 concerned the dosage form of a compressed tablet, the defined amount of 90-98 wt% of the active agent (solriamfetol or salt thereof), the defined amounts of the selected binders and lubricants, and the defined release profile.

The formulation as a compressed tablet with a high drug loading minimized the size of the dosage form and provided the convenience and well-known advantages of tablets as listed in document D12. The experimental results reported in the patent indicated that the defined specific combination of binders and lubricants resulted in stable tablets

capable of rapidly releasing an efficacious dose of solriamfetol.

The objective technical problem could therefore be formulated as the provision of a solid dosage form of solriamfetol or its salt, which upon administration provides improved patient convenience and compliance and delivers an efficacious dose quickly and consistently while maintaining physical stability of the dosage form.

The known advantages of tablets provided the skilled person with motivation to change the dosage form of a capsule to a compressed tablet, in which a high drug loading would be desirable and for which binders and lubricants represented typically required excipients. However, neither the common general knowledge reflected in documents D6-D8, D12 and D15, nor the prior art represented by document D3 would have led the skilled person to expect that the defined amounts of the specified components would achieve an optimised balance of tablet size, tablet hardness, and rapid dissolution. The claimed subject-matter therefore involved an inventive step, even if the objective technical problem were formulated less ambitiously as the provision of an alternative dosage form which maintains rapid and consistent delivery and physical stability.

Similar considerations applied when starting from document D2, because it did not disclose a specific formulation of solriamfetol and merely mentioned tablets in generic terms as a possible dosage form.

III. In its communication under Article 15(1) RPBA, the Board expressed the preliminary opinion that

- capsules comprising solriamfetol as described in Example 1 of document D1 represented the closest prior art

- the objective technical problem could be formulated as the provision of a convenient solid oral dosage form for the oral delivery of solriamfetol which allows for an optimised balance of rapid and consistent delivery of an efficacious dose and physical stability of the dosage form

- the decisive issue appeared to be whether or not the skilled person would, with a reasonable expectation of success, formulate solriamfetol as defined in granted claim 1 to achieve an optimised balance of physical stability of the dosage form and fast release of solriamfetol.

IV. Oral proceedings were held on 10 July 2026.

V. The arguments of the opponent relevant to the present decision are summarized as follows:

Document D1 described in Example 1 capsules comprising 150 mg ADX-N05 (solriamfetol) used in a clinical trial investigating the safety and efficacy of the compound in subjects with narcolepsy. The therapeutic efficacy of solriamfetol was further reflected in documents D7 and D8.

In view of paragraph [0082] and claim 22 of document D1, which described the embodiment of formulating the generically disclosed compounds in capsules containing 150–300 mg active ingredient

without excipients, the skilled person would understand that the capsules used in Example 1 did not contain excipients.

The requirement that at least 85% of solriamfetol be released within less than 15 minutes did not represent a relevant distinguishing feature over the capsules disclosed in document D1. The post-published documents D9 and D10 confirmed that the tablets comprising solriamfetol used in later phase III clinical development exhibited dissolution behaviour similar to that of the capsules used in the earlier clinical studies described in document D1. Moreover, the dissolution parameter constituted a result to be achieved and it had not been shown that it distinguished the claimed subject-matter from the prior art. Whilst paragraph [0043] of document D1 indicated that the disclosed oral dosage forms, including capsules, were not limited to immediate-release formulations, document D6 explained that conventional hard- or soft-gelatine capsules readily ruptured following administration. In the absence of excipients, the capsules of Example 1 would therefore be understood as immediate-release dosage forms.

Accordingly, the differences over document D1 resided principally in the selection of a compressed tablet dosage form and in the definition and amounts of the binder and lubricant components.

The burden of demonstrating any technical effect over the prior art rested on the patent proprietor. However, no improvement in terms of patient convenience, compliance, physical stability or dissolution performance had been shown. In

particular, document D13 demonstrated that tablets did not necessarily provide an overall advantage over capsules. Moreover, to the extent that the absence of excipients and the immediate-release character of the capsules of Example 1 were not expressly disclosed, they were at least highly likely features of these capsules in the light of the content of document D1 as a whole and the common general knowledge reflected in document D6. The proprietor was therefore in a position to perform comparative tests between the claimed tablets and the capsules disclosed in document D1 but had not provided such evidence.

The objective technical problem could therefore only be formulated as the provision of an alternative suitable oral dosage form for solriamfetol, without reference to any improvement beyond the conventional advantages generally associated with tablets.

Document D12 described tablets as a conventional oral dosage form associated with a number of well-known advantages. The skilled person would therefore have been motivated to formulate solriamfetol in tablet form. Solriamfetol was a known active ingredient and its relevant formulation properties, including solubility and compressibility, were intrinsic characteristics that the skilled person would routinely investigate during pharmaceutical development, as explained in document D6. Moreover, document D1 itself already indicated favourable pharmaceutical properties of solriamfetol through its disclosure of compositions formulated without excipients.

Faced with the above problem, the skilled person would, in view of the favourable solubility and compressibility of solriamfetol, have considered the claimed drug loading of 90–98% and the corresponding dissolution profile as obvious features of such a tablet. As explained in documents D6 and D15, the claimed binders and lubricants were standard tablet excipients and the claimed concentration ranges corresponded to customary amounts used in the art.

The objective technical problem aimed at providing a suitable alternative represented only a modest technical challenge, in particular due to the favourable inherent characteristics of solriamfetol. This found confirmation in the experimental data in the patent, which showed that commonly used binders and lubricants employed in their customary concentration ranges generally yielded tablets with suitable hardness and the required dissolution characteristics. Only the tested tablets with starch as binder failed to achieve the required dissolution profile, although even these tablets exhibited relatively rapid release. In accordance with established jurisprudence, including T 2168/11, the expectation of success had to be assessed in the light of this limited level of technical difficulty.

The claimed tablets therefore resulted from routine formulation work directed to the provision of a suitable alternative dosage form. Any favourable balance of tablet characteristics, including high drug loading, rapid dissolution and adequate tablet hardness, merely reflected the expected contribution of the defined conventional binders

and lubricants to providing suitable tablet properties rather than the resolution of several interrelated technical problems.

Document D3 provided an additional incentive towards the claimed subject-matter. It disclosed tablet formulations of highly water-soluble sodium oxybate containing high proportions of active ingredient together with hydroxypropyl cellulose or povidone as binders and magnesium stearate or sodium stearyl fumarate as lubricants.

Starting from the capsules disclosed in document D1 and applying the common general knowledge reflected in documents D6, D12 and D15, or alternatively taking account of the teaching of document D3, the skilled person would therefore have arrived at a tablet formulation according to claim 1 in an obvious manner.

VI. The arguments of the patent proprietor relevant to the present decision are summarised as follows:

Document D1 disclosed no specific formulation of solriamfetol other than the capsules administered in Example 1. Even these capsules were only incompletely described, since document D1 did not disclose their actual composition. While document D1 indicated that the generically disclosed compounds may be comprised in capsules without excipients, it could not be derived from document D1 that the capsules of Example 1 contained solriamfetol without further excipients. Accordingly, the compressed tablet form, the defined high content of solriamfetol, the selection and amounts of the binders and lubricants, and the

defined release profile all represented distinguishing features over the closest prior art.

The patent provided a convenient tablet formulation for solriamfetol combining a high loading of the active ingredient with favourable characteristics in terms of tablet hardness and rapid dissolution. The experimental results reported in the patent demonstrated that the claimed binders and lubricants in the specified amounts enabled the preparation of tablets containing a high proportion of solriamfetol while providing an optimised balance between physical stability and release performance. In particular, the claimed formulations achieved a combination of tablet hardness and dissolution characteristics that was not observed for comparative tablet formulations containing starch as binder or excipient levels outside the claimed ranges.

The objective technical problem was therefore the provision of a convenient solid oral dosage form for the delivery of solriamfetol with an optimised balance between rapid and consistent delivery of an efficacious dose and physical stability of the dosage form. According to established jurisprudence, including T 254/86 and T 1442/18, the absence of a direct comparison with the capsules described in document D1 did not justify disregarding the demonstrated desirable properties associated with the distinguishing features. In any event, a direct comparison with the capsules of document D1 was not feasible, because document D1 did not disclose the specific constitution of the capsules.

The prior art did not provide any suggestion towards the claimed solution. Neither document D1 nor the common general knowledge disclosed or suggested the particular formulation properties of solriamfetol, nor did they indicate that the specific binders and lubricants defined in claim 1, in the claimed amounts, would provide the claimed balance of drug loading, dissolution and physical stability. Document D3 was likewise irrelevant, since its tablet formulations concerned sodium oxybate, a structurally different active ingredient from which no meaningful expectations regarding the formulation of solriamfetol could be derived.

The opponent's arguments relied on an artificial separation of individual formulation features and their associated effects. The claimed subject-matter was instead directed to a tablet formulation in which drug loading, dissolution behaviour and physical stability represented interrelated characteristics. The assessment of inventive step therefore required consideration of the claimed formulation as a whole rather than a separate evaluation of the individual formulation parameters. As in T 728/21, the conventional nature of the individual formulation features did not provide a basis for a reasonable expectation that their claimed combination would achieve the optimised balance of properties.

VII. The appellant-opponent requested that the decision under appeal be set aside and that the patent be revoked in its entirety.

VIII. The respondent-patent proprietor requested, insofar as relevant to the decision, that the appeal be dismissed and the patent be maintained as granted.

Reasons for the Decision

1. The opposition was exclusively based on the ground under Article 100(a) EPC in conjunction with Article 56 EPC. Accordingly, the only issue to be decided in the present appeal proceedings is inventive step.

2. Closest prior art

2.1 The patent discloses immediate-release compressed tablet formulations of solriamfetol having a high loading of active ingredient and comprising defined binders and lubricants in specified amounts. The patent aims to provide tablet formulations which combine a high drug loading with rapid release of solriamfetol and adequate physical stability of the dosage form. The experimental results reported in the patent indicate that the claimed formulation parameters are associated with a favourable balance of these characteristics (see paragraphs [0004], [0022], Example 2, Tables 3-7).

2.2 Document D1 describes phenylalaninol carbamate derivatives (Formula I) and their use in the treatment of sleep disorders, including narcolepsy (see paragraph [0006]). Solriamfetol (ADX-N05), also referred to as O-carbamoyl-(D)-phenylalaninol, is disclosed as a specific embodiment (see paragraphs [0009] and [0033]).

Document D1 further indicates, in generic terms, that the disclosed compounds may be administered in various oral dosage forms, including tablets and capsules (see

paragraphs [0043], [0045] and [0081]). These dosage forms are described as including immediate-release, timed-release and sustained-release formulations (see paragraph [0043]). Document D1 additionally discloses, as a generic formulation option, capsules containing 150-300 mg of the carbamate compounds without excipients (see paragraph [0082] and claim 22). The only concrete oral dosage form disclosed in document D1 is described in Example 1, which reports the administration of capsules comprising 150 mg ADX-N05 in a clinical study involving subjects with narcolepsy.

2.3 According to established jurisprudence (Case Law of the Boards of Appeal of the EPO, 11th edition, 2025, I.D. 3.1; see T 1194/00, Reasons 3.1 and T 1287/14, Reasons 5.2.1), the closest prior art is normally a concrete embodiment directed to the same purpose rather than a generic disclosure requiring the selection of individual features from various parts of a document. The Board therefore considers the capsules administered in Example 1 of document D1, rather than the generic formulation disclosures elsewhere in document D1, to represent the closest prior art.

2.4 The opponent argued that the capsules of Example 1 would be understood by the skilled person to contain solriamfetol without further excipients in view of paragraph [0082] and claim 22 of document D1. The Board is not persuaded by this argument. Paragraph [0082] and claim 22 concern generic formulation options for the compounds disclosed in document D1. In accordance with the established jurisprudence (Case Law of the Boards of Appeal of the EPO, *supra*, I.C.4.3; see T 823/96, Reasons 4.5), subject-matter can only be regarded as implicitly disclosed if it is the clear and unambiguous consequence of the explicit disclosure. This standard

is not met in the present case. Document D1 does not establish any direct and unambiguous link between the generic disclosures in paragraph [0082] and claim 22 and the specific capsules of Example 1.

2.5 The Board is likewise not persuaded that the release requirement defined in claim 1 fails to distinguish the claimed subject-matter from the capsules disclosed in Example 1. Document D1 does not disclose any dissolution profile or release characteristics for these capsules. On the contrary, paragraph [0043] explicitly indicates that the oral dosage forms disclosed in document D1, including capsules, are not limited to immediate-release formulations. The actual release characteristics of the capsules administered in Example 1 therefore remain undisclosed.

2.6 The Board accordingly concludes that document D1 does not disclose a compressed tablet dosage form, the content of solriamfetol as defined in claim 1, the selection and amounts of the claimed binders and lubricants, or the requirement that at least 85% of the active ingredient be released within less than 15 minutes. These features therefore distinguish the claimed subject-matter from the capsules described in Example 1 of document D1.

3. Technical effect and objective technical problem

3.1 The patent reports in Example 2 a series of formulation experiments investigating the influence of different binders, lubricants and excipient levels on tablet hardness and dissolution (see Tables 3-7).

Table 3 reports tablet formulations of solriamfetol containing hydroxypropyl cellulose (HPC) as binder in

amounts of 0%, 1%, 2%, 5% and 10% and a lubricant at 0.075%. The formulation without binder exhibited insufficient hardness, whereas the formulation containing 10% HPC failed the dissolution requirement. Formulations containing HPC within the claimed range satisfied both requirements. Similar observations are reported in Tables 4-7 for hydroxypropyl methylcellulose (HPMC) and povidone as binders and magnesium stearate and sodium stearyl fumarate as lubricants at different concentrations. The reported results further show that formulations containing starch as binder or excipient levels outside the claimed ranges did not provide the same performance.

These experiments thus demonstrate that the claimed formulations combine a high loading of solriamfetol with rapid dissolution and adequate tablet hardness. The reported formulation parameters are therefore associated with a favourable balance of technically relevant tablet characteristics.

3.2 According to established jurisprudence (T 254/86, Reasons 3; T 1442/18, Reasons 19; T 526/21, Reasons 3.4.5; T 722/24, Reasons 5.2.4; compare Case Law of the Boards of Appeal of the EPO, *supra*, I.D.9.15), technically relevant properties demonstrated for the distinguishing features are not to be disregarded merely because the patent does not contain a direct comparison of those properties with the closest prior art. In the present case, high drug loading, rapid dissolution and adequate physical stability represent technically relevant characteristics of a pharmaceutical tablet. The demonstrated balance of these characteristics must therefore be taken into account in the formulation of the objective technical problem. The opponent's argument that these effects

could not be considered in the absence of a direct comparison with the capsules described in Example 1 of document D1 is therefore not persuasive.

Notably, document D1 does not disclose the actual composition of the capsules described in Example 1 and therefore, in line with the considerations in T 2342/19 (Reasons 3.3.7), does not provide a basis for a meaningful comparison with the closest prior art.

Moreover, while the patent does not compare the claimed formulations with capsules, it reports experimental results for actual tablet formulations containing starch as binder or excipient levels outside the claimed ranges. These results confirm that the identified balance of high drug loading, rapid dissolution and adequate tablet hardness is associated with the distinguishing features of the claimed formulation.

3.3 The Board therefore formulates the objective technical problem as the provision of a convenient solid oral dosage form for the delivery of solriamfetol which achieves an optimised balance between rapid and consistent delivery of an efficacious dose and physical stability of the dosage form.

4. Assessment of the solution

4.1 According to established jurisprudence, the assessment of inventive step requires consideration of whether the skilled person would have arrived at the claimed solution with a reasonable expectation of solving the objective technical problem (see Case Law of the Boards of Appeal of the EPO, *supra*, I.D.7.1; see also T 2168/11, Reasons 11.3, cited by the opponent). In the

present case, the relevant question is therefore whether the prior art provided a basis for expecting that the formulation defined in claim 1 would achieve the identified balance between rapid and consistent delivery of an efficacious dose and physical stability of the dosage form.

4.2 It belonged to the common general knowledge, as reflected in document D12 (pages 293-294), that tablets represented a convenient oral dosage form and that a high loading of active ingredient may favourably minimise tablet size. Documents D6 and D15 further show that hydroxypropyl cellulose, hydroxypropyl methylcellulose and povidone were conventionally used binders and that magnesium stearate, calcium stearate and sodium stearyl fumarate were conventionally used lubricants. These documents also indicate that the amounts defined in claim 1 fall within ranges (for binders 2-10%; for lubricants, normally 1% or below) conventionally employed for such excipients(see D6, pages 408-409; D15, page 318). Moreover, routine pharmaceutical development includes the investigation of intrinsic properties such as compressibility and solubility (see D6, page 11, left column and page 122, right column).

4.3 However, this common general knowledge did not provide the skilled person with a reasonable expectation that the formulation defined in claim 1 would solve the identified objective technical problem. Whilst document D1 indicates that the disclosed carbamate compounds, including solriamfetol, may be formulated in capsules without excipients, no information was available regarding the behaviour of solriamfetol in a compressed tablet together with binders and lubricants, let alone in a tablet containing a high proportion of the active

ingredient. In particular, it was not known how the nature and amount of such excipients would affect the balance between tablet hardness and rapid dissolution in such tablets.

The experimental results in the patent (Tables 3-7) confirm that this balance was not predictable. They show that tablet hardness and dissolution represent competing formulation requirements and that achieving an optimum balance between them depends both on the selection of the excipients and on their amounts. Thus, formulations containing starch, which is undisputedly also a conventional binder, did not provide the required dissolution performance, whilst formulations employing the binders outside the claimed, but still conventional, ranges likewise failed to achieve the same balance of properties. The demonstrated effects therefore cannot be reduced to the mere use of conventional excipients within conventional concentration ranges.

In line with the considerations in T 728/21 (Reasons 2.3), the fact that the individual formulation features were known and conventionally employed does not provide a reasonable expectation that their claimed combination would achieve the demonstrated optimisation. In that decision, the Board likewise considered that excipients employed in customary amounts did not render obvious a formulation whose advantageous properties depended on their specific combination.

4.4 Against this background, the Board is not persuaded by the opponent's contention that the objective technical problem represented merely a modest formulation task.

That argument effectively reduces the claimed solution to a series of independent partial considerations. The tablet form is treated separately from the drug loading, the physical stability of the tablet and the release profile. However, the identified objective technical problem concerns the achievement of an optimised balance of interrelated characteristics. The assessment of inventive step cannot therefore be reduced to a separate evaluation of the individual formulation parameters in isolation.

Neither document D1 nor the common general knowledge reflected in documents D6, D12 and D15 therefore provided a basis for expecting that the specific combination of formulation features defined in claim 1 would achieve the identified balance of properties.

Nor does document D3 alter this assessment. Document D3 concerns tablet formulations of sodium oxybate. Whilst certain excipients overlap with those used in the patent, document D3 does not disclose any relationship between the formulation behaviour of sodium oxybate and that of solriamfetol, nor does it identify any general principle which would have led the skilled person to expect that the formulation approach described for sodium oxybate could successfully be transferred to solriamfetol whilst achieving the balance of properties underlying the objective technical problem.

4.5 The Board therefore considers that the prior art did not provide the skilled person with a reasonable expectation of solving the objective technical problem by arriving at the formulation defined in claim 1.

Accordingly, the Board concludes that the subject-matter of claim 1 as granted involves an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

B. Atienza Vivancos A. Usuelli

Decision electronically authenticated