Commissioner’s Decision #1465

Décision de la Commissaire #1465

TOPICS: A11 (New Matter)
O00 (Obviousness)

SUJETS: A11 (Nouvelle matière)
O00 (Évidence)

Application No.: 2,530,215

Demande n°.: 2 530 215

IN THE CANADIAN PATENT OFFICE

DECISION OF THE COMMISSIONER OF PATENTS

Patent application number 2,530,215, having been rejected under subsection 30(3) of the *Patent Rules*, has subsequently been reviewed in accordance with paragraph 30(6)(*c*) of the *Patent Rules*. The recommendation of the Patent Appeal Board and the decision of the Commissioner are to refuse the application.

Agent for the Applicant:

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INTRODUCTION

[1] This recommendation concerns the review of rejected patent application number 2,530,215 entitled "Salinosporamides and methods for use thereof" and owned by the Regents of the University of California. The outstanding issues to be addressed are whether the claims on file describe matter not reasonably to be inferred from the specification or drawings as originally filed and whether the subject-matter of the claims on file would have been obvious. A review of the rejected application has been conducted by the Patent Appeal Board pursuant to paragraph 30(6)(*c*) of the *Patent Rules*. As explained in more detail below, our recommendation is that the application be refused.

BACKGROUND

The application

[2] Patent application 2,530,215, based on a previously filed Patent Cooperation Treaty application, was effectively filed in Canada on June 18, 2004 and was opened to public inspection on January 13, 2005.

[3] The application relates to pharmaceutical compositions comprising the compound salinosporamide A and its use as an anti-cancer agent. According to the application, salinosporamide A is a fermentation product of specific strains of bacteria that inhibits the hyperproliferation of mammalian cells and that could be particularly useful as an anti-cancer agent because of its advantageous pharmaceutical potency in comparison to other known anti-cancer agents.

Prosecution history

[4] On August 18, 2015, a Final Action (FA) was written pursuant to subsection 30(4) of the *Patent Rules*. The FA explained that the subject-matter of the claims on file would have been obvious, contrary to section 28.3 of the *Patent Act*.

[5] In a response to the FA (R-FA) dated February 18, 2016, the Applicant provided arguments as to why the subject-matter of the claims on file was patentable and not open to objection for the reasons outlined in the FA.

[6] As the Examiner was not persuaded by the Applicant's arguments, the application was forwarded to the Patent Appeal Board (the Board) for review, along with a Summary of Reasons (SOR) maintaining the defect identified in the FA.

[7] In a letter dated October 11, 2016, the Board forwarded the Applicant a copy of the SOR and offered the Applicant an opportunity to attend an oral hearing and to make further written submissions. In a letter dated January 10, 2017, the Applicant declined the opportunity of a hearing but expressed the wish to provide further written submissions in response to the SOR. However, such written submissions have not been received.

[8] The present Panel was formed to review the application under paragraph 30(6)(*c*) of the *Patent Rules* and make a recommendation to the Commissioner as to its disposition. In a letter dated July 10, 2018 (the Panel Letter), we set out our preliminary analysis and rationale as to why, based on the record before us, the subject-matter of the claims on file would have been obvious in view of the cited prior art. In the same letter, we also considered whether the instant application does not comply with the *Patent Act* and *Patent Rules* with respect to defects other than those indicated in the FA, pursuant to subsection 30(6.1) of the *Patent Rules*. More specifically, we ascertained whether the claims on file encompass matter not reasonably to be inferred from the specification or drawings as originally filed, contrary to subsection 38.2(2) of the *Patent Act*. In that regard, we set out our preliminary analysis and rationale as to why, based on the record before us, claims 1, 2 and 4 to 6 on file encompass new matter. The Panel Letter also invited the Applicant to provide further written submissions in response to the Panel's preliminary review.

[9] Since the Applicant did not reply to the Panel Letter, the Applicant's representative was contacted by phone. On September 26, 2018, the representative confirmed that the Panel Letter had been received and that no reply would be forthcoming.

ISSUES

[10] In view of the above, two issues are addressed in this review:

i) whether the claims on file encompass matter not reasonably to be inferred from the specification or drawings as originally filed, contrary to subsection 38.2(2) of the *Patent Act*; and

ii) whether the subject-matter of claims on file would have been obvious, contrary to section 28.3 of the *Patent Act*.

LEGAL PRINCIPLES AND PATENT OFFICE PRACTICES

Purposive construction

[11] Essential elements are identified through a purposive construction of the claims. The exercise is conducted from the standpoint of a person skilled in the art by considering the whole of the disclosure, including the specification and drawings: *Free World Trust v Électro Santé Inc*, 2000 SCC 66 [*Free World*]; *Whirlpool Corp v Camco Inc*, 2000 SCC 67 at paras 49(f) and (g) and 52 [*Whirlpool*]. Similarly, according to the *Manual of Patent Office Practice* §13.05, the first step in the construction of the claims of a patent application is to identify the person of ordinary skill in the art (POSITA) and their relevant common general knowledge (CGK). The next step is to identify the problem addressed by the inventors and the solution disclosed in the application. Essential elements can then be identified as those elements of the claims that achieve the disclosed solution as claimed.

New matter

[12] Paragraph Subsection 38.2(2) of the *Patent Act* provides that:

> **(2)** The specification may not be amended to describe matter not reasonably to be inferred from the specification or drawings as originally filed, except in so far as it is admitted in the specification that the matter is prior art with respect to the application.

[13] The question of whether an amendment adds new matter to the specification is assessed from the standpoint of the POSITA, who necessarily possesses the CGK in the relevant art, and requires a comparison of the pending specification with the one originally filed: see *Re Uni-Charm Corp* (2013), 119 CPR (4th) 462, CD No 1353, and the Commissioner's Decision cited therein. There is no need to find an explicit reference to the matter in the originally filed specification: an inference of its presence is sufficient to conclude that the amendment complies with subsection 38.2(2) of the *Patent Act*.

Obviousness

[14] Section 28.3 of the *Patent Act* sets out the statutory requirement that the claimed subject-matter must not have been obvious to the POSITA:

> The subject-matter defined by a claim in an application for a patent in Canada must be subject-matter that would not have been obvious on the claim date to a person skilled in the art or science to which it pertains, having regard to
>
> (a) information disclosed more than one year before the filing date by the applicant, or by a person who obtained knowledge, directly or indirectly, from the applicant in such a manner that the information became available to the public in Canada or elsewhere; and
>
> (b) information disclosed before the claim date by a person not mentioned in paragraph (a) in such a manner that the information became available to the public in Canada or elsewhere.

[15] In *Apotex Inc v Sanofi-Synthelabo Canada Inc*, 2008 SCC 61 at para 67 [*Sanofi*], the Supreme Court of Canada stated that it is useful in an obviousness inquiry to follow the following four-step approach:

> (1) (a) Identify the notional "person skilled in the art";
> (b) Identify the relevant common general knowledge of that person;
>
> (2) Identify the inventive concept of the claim in question or if that cannot readily be done, construe it;
>
> (3) Identify what, if any, differences exist between the matter cited as forming part of the "state of the art" and the inventive concept of the claim or the claim as construed;
>
> (4) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[16] Additionally, *Sanofi* instructs at para 71 that one may look to the actual course of conduct followed by the inventors: "For example, if the inventor and his or her team reached the invention quickly, easily, directly and relatively inexpensively, in light of the prior art and common general knowledge, that may be evidence supporting a finding of obviousness, unless the level at which they worked and their knowledge base was above what should be attributed to the skilled person".

[17] With respect to the second step of the obviousness analysis, *Sanofi* recognized at paras 76 to 78 that the inventive concept of a claim can differ from its construction where the inventive concept of a patent is not readily discernable from the claims themselves (as may be the case with a bare chemical formula) and that it is acceptable, in such circumstances, to read the specification in the patent to determine the inventive concept of the claims:

> [76] The construction of the claims in the '777 patent is not an issue. It is agreed that they constitute the dextro-rotatory isomer of the racemate and its pharmaceutically acceptable salts and processes for obtaining them.
>
> [77] The inventive concept of the claims is not readily discernable from the claims themselves. A bare chemical formula in a patent claim may not be sufficient to determine its inventiveness. In such cases, I think it must be acceptable to read the specification in the patent to determine the inventive concept of the claims. Of course, it is not permissible to read the specification in order to construe the claims more narrowly or widely than the text will allow.
>
> [78] In the present case, it is apparent that the inventive concept of the claims in the '777 patent is a compound useful in inhibiting platelet aggregation which has greater therapeutic effect and less toxicity than the other compounds of the '875 patent and the methods for obtaining that compound.

[18] There may be cases in which the inventive concept cannot be easily ascertained. In such cases, the Federal Court of Appeal stated in *Ciba Specialty Chemicals Water Treatments Ltd's v SNF Inc*, 2017 FCA 225, para 77, that the focus of the obviousness inquiry should be on the claims, not the inventive concept:

> There may be cases in which the inventive concept can be grasped without difficulty but it appears to me that because "inventive concept" remains undefined, the search for it has brought considerable confusion into the law of obviousness. That uncertainty can be reduced by simply avoiding the inventive concept altogether and pursuing the alternate course of construing the claim. Until such time as the Supreme Court is able to develop a workable definition of the inventive concept, that appears to me to be a more useful use of the parties' and the Federal Court's time than arguing about a distraction or engaging in an unnecessary satellite debate.

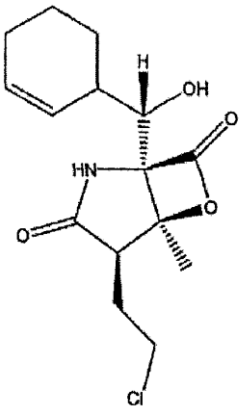
ANALYSIS

Purposive construction

[19] We consider that independent claims 1, 3 and 5 on file are representative of the subject-matter of the claims. The pharmaceutical composition recited in each of these claims includes a compound having the structure of compound (V) ("salinosporamide A") and further comprises sucrose. The presence of sucrose in the recited pharmaceutical composition is particularly relevant to this review.

[20] Claims 1, 3 and 5 on file read as follows:

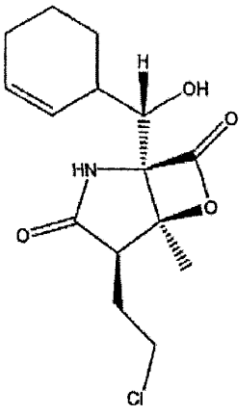
> 1. A pharmaceutical composition comprising a compound having the structure of compound (V), or pharmaceutically acceptable salt thereof:



V

and a pharmaceutically-acceptable diluent or carrier, wherein the pharmaceutical composition is in a form of a sterile injectable solution and further comprises sucrose. [Emphasis added]

3. A pharmaceutical composition comprising a compound having the structure of compound (V), or pharmaceutically acceptable salt thereof:



V

and a pharmaceutically-acceptable diluent or carrier, wherein the pharmaceutical composition is in a solid form and further comprises sucrose. [Emphasis added]

5. Use of an effective amount of a pharmaceutical composition according to claim 1 or claim 3 for treating a neoplasm selected from the group consisting of mammary neoplasm, small-cell lung neoplasm, non-small-cell lung neoplasm, colorectal neoplasm, leukemia, melanoma, central nervous system (CNS) neoplasm, ovarian neoplasm, prostate neoplasm, renal neoplasm, pancreatic adenocarcinoma, sarcoma of soft tissue,

sarcoma of bone, head neoplasm, neck neoplasm, gastric neoplasm, thyroid neoplasm, stomach neoplasm, myeloma, bladder neoplasm, neuroendocrine neoplasm, non-Hodgkin's disease neoplasm and Hodgkin's disease neoplasm.

The POSITA and the relevant CGK

[21] In the Panel Letter, we expressed the view that the POSITA is a team comprising a pharmaceutical chemist, an oncologist, and a pharmaceutical formulationist.

[22] With respect to the CGK possessed by the POSITA, we stated in the Panel Letter that such a person would know the following:

- The different common forms of pharmaceutical compositions, including in the form of a solid (e.g., powders, tablets, capsules and the like) or a solution (e.g., sterile injectable solutions, syrups, elixirs and the like).
- The different common ways of administering pharmaceutical compositions, including topical, enteral and parenteral administrations.
- The common pharmaceutically acceptable excipients, carriers, diluents, binders, preservatives, sweetening agents and bulking agents suitable for use in manufacturing pharmaceutical compositions in solid and liquid forms.

Problem to be solved, the proposed solution and the essential elements that achieve the proposed solution

[23] The FA stated that the problem to be solved is "to produce pharmaceutical compositions which can be used in the treatment of cancer" and identified the compound having the structure of compound (V) ("salinosporamide A") and sucrose as essential elements of the claims. The Applicant has not disputed these assessments.

[24] Although we expressed some reservations in the Panel Letter as to whether sucrose would be considered by the POSITA as an essential element to solve the identified

problem, we have nonetheless taken it as such and identified the following elements as being part of the subject-matter of independent claims 1, 3 and 5:

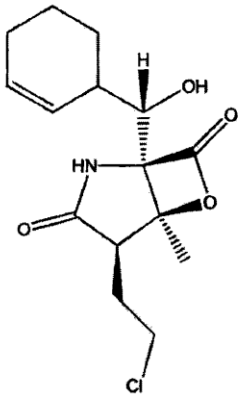
- Salinosporamide A or a pharmaceutically acceptable salt thereof;
- The pharmaceutical composition is in a form of a sterile injectable solution (claim 1) or in a solid form (claim 3);
- The pharmaceutical composition further comprises sucrose; and
- Use of the pharmaceutical composition that further comprises sucrose for treating a neoplasm (claim 5).

[25] As there has been no reply to the Panel Letter by the Applicant, we therefore adopt for the purposes of this review the above identifications of the POSITA and the relevant CGK, as well as the characterization of the problem to be solved, the solution and the essential elements.

New matter

[26] Claims 1 to 6 encompass a pharmaceutical composition comprising salinosporamide A that is in a form of a sterile injectable solution (claims 1, 2 and 4 to 6) or in a solid form (claims 3 and 4 to 6) and that further comprises sucrose. We noted in the Panel Letter that said subject-matter was explicitly introduced into the specification through a claim set submitted on August 22, 2011, more specifically through claim 12 which depends on claims 8 and 10:

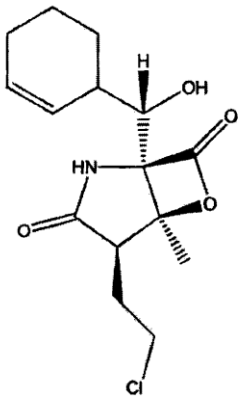
> 8. A pharmaceutical composition comprising an effective amount of a compound having the structure of compound (V), or pharmaceutically acceptable salt thereof:



(V) ,

wherein the pharmaceutical composition is in a form of a sterile injectable solution.

10. A pharmaceutical composition comprising an effective amount of a compound having the structure of compound (V), or pharmaceutically acceptable salt thereof:



(V) ,

wherein the pharmaceutical composition is in a solid form.

12. The pharmaceutical composition of any one of claims 8-11, wherein the pharmaceutical composition further comprises sucrose. [Emphasis added]

[27] The submissions accompanying the amended claims did not point to the original specification or drawings to support the subject-matter of claim 12.

[28] As stated above, the assessment as to the presence of new matter requires a comparison of the pending specification and drawings with those of the originally filed application, and a determination as to whether the subject-matter of the amendments would have been reasonably inferred from the original specification or drawings by the POSITA as of the filing date.

[29] In the Panel Letter, we expressed the view that the following passages of originally filed specification are the most relevant to the matter at issue:

> Invention pharmaceutical compositions may be administered by any suitable means, for example, orally, such as in the form of tablets, capsules, granules or powders; sublingually; buccally; parenterally, such as by subcutaneous, intravenous, intramuscular, or intracistemal injection or infusion techniques (e.g., as sterile injectable aqueous or nonaqueous solutions or suspensions); nasally such as by inhalation spray; topically, such as in the form of a cream or ointment; or rectally such as in the form of suppositories; in dosage unit formulations containing non-toxic, pharmaceutically acceptable vehicles or diluents. (page 19, para [0060])
>
> …
>
> Compositions intended for oral use may be prepared according to any method known to the art for the manufacture of pharmaceutical compositions and such compositions may contain one or more agents selected from the group consisting of sweetening agents, flavoring agents, coloring agents and preserving agents in order to provide pharmaceutically elegant and palatable preparations. Tablets contain the active ingredient in admixture with non-toxic pharmaceutically acceptable excipients which are suitable for the manufacture of tablets. (page 23, para [0071])
>
> …
>
> The aqueous suspensions may also contain one or more preservatives, for example ethyl, or n-propyl, p-hydroxybenzoate, one or more coloring agents, one or more flavoring agents, and one or more sweetening agents, such as sucrose or saccharin. (page 24, para [0073])
>
> …

> Syrups and elixirs may be formulated with sweetening agents, for example glycerol, propylene glycol, sorbitol or sucrose. Such formulations may also contain a demulcent, a preservative and flavoring and coloring agents.
>
> The pharmaceutical compositions may be in the form of a sterile injectable aqueous or oleagenous suspension. This suspension may be formulated according to the known art using those suitable dispersing or wetting agents and suspending agents which have been mentioned above. The sterile injectable preparation may also be a sterile injectable solution or suspension in a non-toxic parenterally-acceptable diluent or solvent, for example as a solution in 1,3-butane diol. Among the acceptable vehicles and solvents that may be employed are water, Ringer's solution and isotonic sodium chloride solution. In addition, sterile, fixed oils are conventionally employed as a solvent or suspending medium. For this purpose any bland fixed oil may be employed including synthetic mono- or diglycerides. In addition, fatty acids such as oleic acid find use in the preparation of injectables. (page 24, paras [0076] and [0077])

[30] On the basis of the cited passages above, we expressed the view in the Panel Letter that the POSITA would understand that:

- the described use for sucrose is as a sweetening agent in the disclosed pharmaceutical compositions intended for oral use;
- the described pharmaceutical compositions intended for oral use include compositions in the form of tablets, capsules, granules or powders (i.e., solid form); and
- the description of a sterile injectable solution does not refer directly or indirectly to a sweetening agent or sucrose as an optional additional component of the solution.

[31] It was also our view that it was commonly known and understood by the POSITA at the filing date that pharmaceutical compositions in the form of conventional sterile injectable solutions would not include a sweetening agent or sucrose.

[32] We therefore consider that:

- a pharmaceutical composition comprising salinosporamide A that is in a solid form and that further comprises sucrose is reasonably inferable from the original specification; and
- a pharmaceutical composition comprising salinosporamide A that is in a form of a sterile injectable solution and that further comprises sucrose is not reasonably inferable from the original specification and drawings.

[33] In light of the above, and in absence of submissions from the Applicant, we consider that claims 1, 2 and 4 to 6 encompass matter not reasonably to be inferred from the specification or drawings as originally filed, contrary to subsection 38.2(2) of the *Patent Act*.

Obviousness

[34] Notwithstanding our view above with respect to the new matter defect affecting claims 1, 2 and 4 to 6, for the sake of completeness, we have considered all claims on file in the obviousness analysis that follows. Said analysis was performed in accordance with the four-step approach put forward in *Sanofi*.

Identify the POSITA and the relevant CGK

[35] The POSITA and the relevant CGK have been set out above as part of the purposive construction of the claims. Although the identification of the relevant CGK above was performed on the basis of the common knowledge of the worker skilled in the art to which the patent relates as of the publication date of the instant application in accordance with *Free World* at para 54 and *Whirlpool* at para 55, we consider that the identified elements of knowledge also formed part of the POSITA's CGK as of the claim date.

Identify the inventive concept

[36] In the Panel Letter, we identified the following elements of the claims as being part of the inventive concept and which does not appear to be in dispute. These elements correspond to the subject-matter of the claimed invention as identified in the "Purposive construction" section above:

- Salinosporamide A or a pharmaceutically acceptable salt thereof;
- The pharmaceutical composition is in a form of a sterile injectable solution (claim 1) or in a solid form (claim 3); and
- The pharmaceutical composition further comprises sucrose.

[37] In the Panel Letter on pages 13 to 16, we have considered whether the inventive concept should also include an unexpected and beneficial stabilizing effect of sucrose on salinosporamide A pharmaceutical compositions, as submitted by the Applicant in the R-FA, and expressed the view that this alleged beneficial stabilizing effect is not part of the subject-matter of the claimed invention as identified by claims construction:

> Given that the references to the two principal components of the claimed pharmaceutical composition are limited to their identification by a bare chemical formula (salinosporamide A) and a chemical name (sucrose), we consider it appropriate to read the specification as a whole to determine whether additional characteristics, associated with either compound or the recited form of the pharmaceutical composition, may be construed as being part of the subject-matter of the claims.
>
> Salinosporamide A is presented in the description as the exemplary compound of the invention. The description discloses that salinosporamide A shows cytotoxity activity against a human colon cancer cell line but no significant antibacterial or antifungal activity after a limited screening.
>
> With regard to sucrose, we note that the description does not state or otherwise suggest an unexpected and beneficial stabilizing effect for sucrose when added to salinosporamide A pharmaceutical compositions. As mentioned above in the new matter analysis section, the only passage of the description that refers specifically to the addition of sucrose to salinosporamide A pharmaceutical compositions relates to the well-known sucrose's sweetening property. It follows that we consider that the inclusion of an unexpected and beneficial stabilizing effect for

sucrose in the inventive concept is neither consistent with the disclosure of the specification as it would be understood from the standpoint of the POSITA nor the claimed subject-matter as identified by claim construction. Therefore, we are of the preliminary view that the POSITA would consider that no surprising or unexpected benefit of adding sucrose to salinosporamide A pharmaceutical compositions is explicitly disclosed or reasonably inferable from the patent application.

With respect to a pharmaceutical composition that is in a form of a sterile injectable solution or in a solid form, we are of the view that the POSITA would understand from the description, notably paragraphs [0058] to [0060] and paragraphs [0070] to [0081] that these specific types of pharmaceutical compositions are two options from a variety of other well-known and common alternatives, not necessarily the preferred ones nor types of pharmaceutical compositions that stand out from the others for another reason, such as being associated with surprising or unexpected characteristics for example.

To the extent that it is submitted by the Applicant that the data provided on September 24, 2013 establish that sucrose provides a tangible benefit to the pharmaceutical formulations of salinosporamide A and that such benefit should not be ignored when considering the inventive ingenuity of the claimed subject-matter, we respectfully disagree.

Although not specified in Applicant's submissions, we consider that the provided stability test results were obtained after the filing of the instant application. The FA referred to these results as post-filing data and the Applicant has not disputed this characterization in the R-FA. Further, the fact that highly similar data are represented in Figures 5 and 6 of the international application WO 2008/095195A2 filed on February 4, 2008 (almost four years after the filing date of the instant application) tends to support our view.

The Federal Court in *Janssen-Ortho Inc v Novopharm Ltd*, 2006 FC 1234 offered the following relevant reasoning at para 113 as to why subsequently recognized advantages would not assist the inquiry as to inventive ingenuity and noted that such advantages may themselves be the subject of a subsequent patent:

> The inventors may have perceived only certain advantages, yet later those inventors or others may determine that other, previously unrecognized advantages lay in the alleged invention. This factor is of limited usefulness in considering inventive ingenuity as of the date of the invention. The recognition of later advantages, if unexpected, may themselves be the subject of a patent. To the extent that the United States Courts in cases such as *Re Zenitz* 33 F. 2d 924 have placed weight upon subsequently discovered advantages that is not the law here. Little, if any, weight should be put on this factor.

The Court applied the above reasoning to the facts of the case at para 114:

> Levofloxacin has achieved good acceptance in combating microbes associated with strep pneumonia and in treating infections of the eye. Neither of these uses are specifically suggested in the patent. No weight is given to these subsequent uses. [Emphasis added]

On appeal, the above rationale has been specifically acknowledged by the Federal Court of Appeal at para 26 of *Novopharm Ltd v Janssen-Ortho Inc*, 2007 FCA 217:

> I find it difficult to envisage a situation where a subsequently recognized advantage to a claimed invention would be of any assistance in determining whether inventive ingenuity was required to make it. I can imagine a situation where the commercial success of an invention is attributable to a subsequently recognized advantage, but that would not assist the inquiry as to inventive ingenuity. I recognize that it is impossible to imagine every possible situation, but given the current state of the jurisprudence I would be inclined to give this factor no weight except in the most extraordinary case.

Therefore, we consider that no weight should be given to the data submitted on September 24, 2013 within our obviousness analysis because the relevant date for the determination of obviousness, or lack thereof, is the claim date.

Further, had the submitted results been obtained prior the claim date, we are of the view that the case law does not indicate that the inventive ingenuity of the subject-matter of the invention as identified by claim construction may be ascertained by turning to evidence outside of a patent application disclosure in cases where the alleged benefit or advantage is neither mentioned in the claims, indicated in the remainder of the specification nor reasonably derivable by the POSITA from the information contained in the specification. To the contrary, we consider that the basis for understanding the claimed invention for the purpose of determining its compliance with the patentability requirements of the *Patent Act* must be found within the four corners of the patent application (see *Whirlpool* at para 49(f)).

[38] In light of the above, and in absence of submissions from the Applicant, we are of the view that the POSITA would consider that the inventive concept of claims 1 and 3 is a pharmaceutical composition in the form of a sterile injectable solution (claim 1) or in a solid form (claim 3) comprising:

- salinosporamide A or a pharmaceutically acceptable salt thereof, a compound having anti-cancer activity; and
- sucrose, a sweetening agent.

Differences between the matter cited as forming part of the "state of the art" and the inventive concept

[39] The following two prior art references are cited in the FA and referred to in the R-FA:

- D1: Feling et al., *Angew. Chem. Int. Ed.*, 42, pages 355-357, January 20, 2003; and
- D2: Canadian patent CA2429163, Fenical et al., June 20, 2002.

[40] Having reviewed the documents above, we stated the following in the Panel Letter with regard to their respective disclosures.

[41] D1 discloses that a high percentage of the organic extracts of cultured bacteria from a new taxon named "*Salinospora*" possess antibiotic and anti-cancer activities, which suggests that these bacteria are an excellent resource for drug discovery. D1 further discloses the isolation and structural characterization of salinosporamide A, a proteasome inhibitor. Finally, D1 discloses that salinosporamide A displays potent cytotoxicity against different cancer cell lines (colon carcinoma, non-small lung cancer, central nervous cancer, melanoma and breast cancer).

[42] D2 discloses that a new taxon named "*Salinospora*" is a rich source of active biomolecules for use in pharmaceutical compositions. D2 further discloses the isolation and structural characterization of salinosporamide A, bioactive metabolite obtained from the *Salinospora* group. Finally, D2 discloses that salinosporamide A is a potent cytotoxin against a colon carcinoma cell line.

[43] In the Panel Letter, we expressed the view that the POSITA would consider that the main differences between the teachings of D1 and D2 and the inventive concept of independent claims 1 and 3 is that the "state of the art" does not disclose:

- A salinosporamide A pharmaceutical composition in the form of a sterile injectable solution or in a solid form; and
- A salinosporamide A pharmaceutical composition that also includes sucrose as a sweetening agent.

[44] In absence of submissions from the Applicant, we still consider that the main differences between the teachings of D1 and D2 and the inventive concept of independent claims 1 and 3 as construed are the ones recited above.

Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require any degree of invention?

[45] In the Panel Letter, we summarized the submissions of the R-FA as to why the subject-matter of the claims on file would not have been obvious to the POSITA in view of the cited prior art as follows:

- There is no guidance in either of Dl or D2 that a pharmaceutical composition comprising salinosporamide A and sucrose as a sterile injectable solution or a solid form would be beneficial or advantageous.
- There are countless different fillers, bulking agents, and sweetening agents that can be used in a pharmaceutical formulation. However, there is no teaching or suggestion in either D1 or D2 to specifically include sucrose in a pharmaceutical composition comprising salinosporamide A.
- The POSITA would actually have been discouraged from attempting to prepare a pharmaceutical formulation of salinosporamide A as an injectable solution or as a solid form because salinosporamide A would be expected to be largely insoluble in water due to its carbogenic framework, and expected to be sensitive to water, at least because of its β-lactone ring and primary alkyl chloride.

[46] On pages 17 to 21 of the Panel Letter, we addressed the above submissions and expressed the preliminary view that the subject-matter of the claims on file would have been obvious to the POSITA:

> When, in the previous step of the analysis above, we identified the main differences between the teachings of D1 and D2 and the inventive concepts of independent claims 1 and 3, we acknowledged that there is a lack of specific guidance in either D1 or D2 to include sucrose in a pharmaceutical composition comprising salinosporamide A. We consider, however, that such a lack of specific guidance does not necessarily establish the inventive ingenuity of adding sucrose in pharmaceutical compositions comprising a known compound.
>
> The Federal Court of Appeal reminded at para 65 of *Bristol-Myers Squibb Canada Co v Teva Canada Ltd*, 2017 FCA 76 that the instant step of the obviousness analysis is concerned with whether bridging the difference between the prior art and a second point requires inventiveness:
>
> > It may be helpful to keep in mind that the obviousness analysis asks whether the distance between two points in the development of the art can be bridged by the Skilled Person using only the common general knowledge available to such a person. If so, it is obvious. The first of those points is the state of the prior art at the relevant date. References in the jurisprudence to "the inventive concept", "the solution taught by the patent", "what is claimed" or simply "the invention" are attempts to define the second point.
>
> We consider, in the context of the instant case, that the emphasis of the inquiry should be put on the last portion of the question that is framing the fourth step of the obviousness analysis. Accordingly, the more appropriate question, in our view, is not whether choosing and adding sucrose to pharmaceutical compositions comprising salinosporamide A was obvious, but whether this step reflects any degree of inventive ingenuity at the claim date as opposed to mere arbitrariness.
>
> With regard to inventive ingenuity necessary to support a valid patent, the Exchequer Court of Canada in *Canadian Gypsum Co v Gypsum, Lime & Alabastine, Canada Ltd* [1931] Ex CR 180 stated at para 12 that the required inventive ingenuity may be found in the underlying idea and/or in the method of carrying it into practise the following:
>
> > [T]he inventive ingenuity necessary to support a valid patent may be found in the underlying idea, or in the practical application of that idea, or in both. It may happen that the idea or conception is a meritorious one, but that once suggested, its application is very simple. Again, it may be that the idea is an obvious one, but that ingenuity is required to put it into practise. Or, again, the idea itself may have merit and the method of carrying it into practise also requires inventive ingenuity.

Having reviewed the instant application as a whole, it is our view that the underlying general idea of adding sucrose as a sweetening agent to pharmaceutical compositions in a solid form intended for oral use is an obvious one. With regard to the general underlying idea of adding sucrose as a sweetening agent to pharmaceutical compositions in a form of a sterile injectable solution, it is difficult to consider the inventiveness of it as such an idea is not, as indicated above in the "new matter" section, reasonably to be inferred from the specification or drawings as originally filed to begin with.

With regard to the actual making of the claimed pharmaceutical compositions, the instant application does not disclose the actual preparation of pharmaceutical compositions comprising salinosporamide A and sucrose and entirely relies on the ordinary skills and the relevant CGK possessed by the POSITA for the determination and making of appropriate pharmaceutical compositions comprising salinosporamide A in a solid or sterile injectable solution form. It follows that the actual course of conduct of the Applicant does not favour a level of proficiency or a knowledge base that is above what should be attributed to the POSITA.

Further and with regard to both pharmaceutical composition forms, we consider that there is no indication or suggestion in the specification or the CGK that particular forms of pharmaceutical compositions would appear to be problematic to the POSITA (e.g. an aqueous sterile injectable solution form) or that ingenuity would be required from the POSITA to put into practise the claimed subject-matter even in the more specific context of pharmaceutical compositions comprising salinosporamide A.

Unexpected benefits or advantages associated with the claimed subject-matter may also indicate inventive ingenuity and we agree with the Applicant that there is no guidance in either Dl or D2 that a pharmaceutical composition comprising salinosporamide A and sucrose as a sterile injectable solution or a solid form would be beneficial or advantageous. However, we reiterate our preliminary view that the POSITA would not consider that the claimed subject-matter as identified by claim construction includes any benefit or advantage associated with the presence of sucrose beyond those expected and commonly known in the field of preparation of pharmaceutical compositions, including the commonly known benefits of adding sucrose to formulations as a sweetening agent and those associated with the specific forms of pharmaceutical compositions contemplated by the claims.

Taken as a whole, the foregoing considerations do not support inventiveness for adding sucrose to a pharmaceutical composition comprising salinosporamide A as an active ingredient, being in a solid or sterile injectable solution form.

Pharmaceutical formulations in a solid form comprising salinosporamide A and sucrose and uses thereof

We consider that the POSITA at the claim date, made aware of the anti-cancer properties of salinosporamide A by D1 or D2, would have been motivated to prepare pharmaceutical compositions for use as anti-cancer drugs comprising salinosporamide A as an active ingredient and to add any other pharmaceutical additives of a type appropriate to the chosen mode of administration, including adding sucrose as a sweetening agent to pharmaceutical compositions in solid form intended for oral use (e.g., tablets, capsules, granules or powders).

We consider that the differences between the cited "state of the art" can be bridged by the POSITA through the application of the relevant CGK available. Indeed, the instant application expressly contemplates and effectively relies on the application of the relevant CGK for the determination and making of appropriate pharmaceutical compositions comprising salinosporamide A in a solid form and sucrose. Therefore, our preliminary view is that the POSITA would arrive to the subject-matter of claims 3 and 5 without exercising any inventive ingenuity.

Pharmaceutical formulations in a sterile injectable solution form comprising salinosporamide A and sucrose, and uses thereof

In some sense there may not be specific motivation or reason for the POSITA to add a sweetening agent such as sucrose to a sterile injectable solution comprising salinosporamide A, or any other superfluous excipient for that matter. Such extraneous excipients do not address a problem with sterile injectable solutions comprising salinosporamide A or improves such solutions. There is nothing inventive in finding a solution to a problem that never existed at the claim date (see *Sanofi-Aventis Canada Inc v Ratiopharm Inc*, 2010 FC 230, at para 87).

Further and notwithstanding our preliminary view that a sterile injectable solution form comprising salinosporamide A and sucrose is not reasonably to be inferred from the specification or drawings as originally filed, it is also our view that such a composition is arbitrary, not inventive.

The following passage from *Actavis v Novartis* [2010] EWCA Civ 82 at paras 36 and 37 illustrates well why arbitrariness is not inventive:

> This runs like this. Suppose the patent claim is for a plate of diameter 5¼ inches. And suppose no-one can find a plate of that particular diameter in the prior art. Then (a) it is novel and (b) it is non-obvious for there is no particular reason to choose that diameter. The conclusion, that the plate is patentable, is so absurd that it cannot be so.
>
> What then is the answer to the paradox? It is this: the 5¼ inch limitation is purely arbitrary and non-technical. It solves no problem and advances the art not at all. It is not inventive. And although "inventive step" is defined as being one which is not obvious, one must always remember the purpose of that definition - to define what is inventive. That which is not inventive by any criteria is not made so by the definition. Trivial limitations, such as specifying the plate diameter, or painting a

> known machine blue for no technical reason are treated as obvious because they are not inventive.
>
> Having also considered dependent claims 2, 4 and 6 on file, we do not consider that an inventive step would have been required from the POSITA in respect of an aqueous sterile injectable solution, the presence of an additional anti-neoplastic agent or a more limited group of neoplasms to be treated.

[47] For the reasons expressed in the passage cited above, and in absence of submissions from the Applicant, we consider that the subject-matter of claims 1 to 6 on file would have been obvious, contrary to section 28.3 of the *Patent Act*.

RECOMMENDATION OF THE BOARD

[48] We recommend that the application be refused on the basis that claims 1, 2 and 4 to 6 encompass matter not reasonably to be inferred from the specification or drawings as originally filed, contrary to subsection 38.2(2) of the *Patent Act*, and that the subject-matter of claims 1 to 6 on file would have been obvious at the claim date, contrary to section 28.3 of the *Patent Act*.

Marcel Brisebois Member	Ed MacLaurin Member	Leigh Matheson Member

DECISION

[49] I concur with the findings of the Patent Appeal Board and its recommendation that the application should be refused because claims 1, 2 and 4 to 6 encompass matter not reasonably to be inferred from the specification or drawings as originally filed, contrary to subsection 38.2(2) of the *Patent Act*, and that the subject-matter of claims 1 to 6 on file would have been obvious at the claim date, contrary to section 28.3 of the *Patent Act*.

[50] Accordingly, I refuse to grant a patent on this application. Under section 41 of the *Patent Act*, the Applicant has six months within which to appeal my decision to the Federal Court of Canada.

Johanne Bélisle
Commissioner of Patents
Dated at Gatineau, Quebec,
this 17th day of October, 2018.