Inventiveness of Pharmaceutical Polymorph Patents in China

I. Current Examination Standards over Inventiveness of Chinese Pharmaceutical Polymorph Patents

There are two sets of rules for inventiveness assessment under the Patent Examination Guidelines, both of which rely on the same evaluation flow, whether a polymorph invention can produce a useful technical effect is the core evaluation standard.

1. General Standard: the "Three-Step Approach"

1.1 Relevant Rules

Section 1.3, Article 25 of the current Patent Law of the People's Republic of China (2009) stipulates that, "Inventiveness refers to that an invention is not foreseeable and is neither simply derived from the prior art, nor anticipated. The examination of inventiveness shall be conducted in accordance with the general procedures and standards described in the current Patent Examination Guidelines as follows: (1) determining the closest prior art; (2) determining the technical problem actually solved; and (3) determining whether the technical solution is an inventive step, i.e., whether the technical solution is obvious in light of the closest prior art."

1.2 Examination Standard

"Inventiveness is the core of the patent examination. When applying the "Three-Step Approach" for polymorph patents, it is generally presumed that there is a universal technical evaluation in the prior art or that the crystal form of an active pharmaceutical ingredient, from a structural perspective, is a conventional state under the prior art and is an expectation in the prior art. In this case, the invention should be expected to produce a new effect or have a significant effect which is unexpected. Such an unexpected effect can be expected to be an unexpected technical effect, which is defined as a "quantitative" change or a "qualitative" change.

1.3 Relevant Rules

Section 1.2 and Article 22.3 of the current Patent Law of the People's Republic of China (2009) stipulate that, "Inventiveness is the core of the patent examination. When applying the "Three-Step Approach" for polymorph patents, it is generally presumed that there is a universal technical evaluation in the prior art or that the crystal form of an active pharmaceutical ingredient, from a structural perspective, is a conventional state under the prior art and is an expectation in the prior art. In this case, the invention should be expected to produce a new effect or have a significant effect which is unexpected. Such an unexpected effect can be expected to be an unexpected technical effect, which is defined as a "quantitative" change or a "qualitative" change."

1.4 Examination Standard

The standard for "unexpected technical effect" is the core evaluation standard.

2. Special Standard for Chemical Inventions

2.1 Relevant Rules

In a chemical invention, the inventiveness assessment of polymorph patents can follow the same special procedure on inventiveness of chemical inventions in Chapter 15 of Part II of the Patent Examination Guidelines (2017). That is, "In a chemical invention, a comparison between the structure of the claimed compound and the structure of the closest prior art is necessary. If the chemical formula of the claimed compound is not an obvious specialization or modification of the chemical formula of the closest prior art, then the chemical formula of the claimed compound is different from that of the closest prior art. If the chemical formula of the claimed compound is a modification of the chemical formula of the closest prior art, then the chemical formula of the claimed compound is a new chemical composition or a new chemical structure."

2.2 Examination Standard

"Inventiveness is the core of the patent examination. When applying the "Three-Step Approach" for chemicals, it is generally presumed that there is a universal technical evaluation in the prior art or that the chemical formula of the active pharmaceutical ingredient, from a structural perspective, is a conventional state under the prior art and is an expectation in the prior art. In this case, the invention should be expected to produce a new effect or have a significant effect which is unexpected. Such an unexpected effect can be expected to be an unexpected technical effect, which is defined as a "quantitative" change or a "qualitative" change."

2.3 Relevant Rules

Section 5.3, Chapter 4 of Part II of the Patent Examination Guidelines (2017) stipulates that: "Inventiveness refers to that an invention is not foreseeable and is neither simply derived from the prior art, nor anticipated. The examination of inventiveness shall be conducted in accordance with the general procedures and standards described in the current Patent Examination Guidelines as follows: (1) determining the closest prior art; (2) determining the technical problem actually solved; and (3) determining whether the technical solution is an inventive step, i.e., whether the technical solution is obvious in light of the closest prior art."

2.4 Examination Standard

The standard for "unexpected technical effect" is the core evaluation standard.

3. Relevant Judicial Practice

3.1 Relevant Rules

Since 2005, there have been many decisions on pharmaceutical polymorph patents at the Patent Reexamination Board ("PRB"). In order to conduct a further inventiveness examination and provide recommendations to the PRB, the China Intellectual Property Research Institute of Nanjing University published a paper entitled "Inventiveness of Pharmaceutical Polymorph Patents in China", which is a reference for the PRB and other inventiveness examination authorities.

3.2 Examination Standard

The standard for "unexpected technical effect" is the core evaluation standard.

II. Relevant Judicial Practice

3.1 Relevant Rules

The Supreme People's Court dismissed the retrial petition, explaining in its ruling that, "The relevant authorities shall conduct further inventiveness examination and provide recommendations to the PRB."

3.2 Examination Standard

The standard for "unexpected technical effect" is the core evaluation standard.
2.2 Observations and Speculations

2.2.1 The determinations on the inventiveness of pharmaceutical polymorph patents are fully consistent. In the eight judicial precedents, Chinese courts at all levels denied the inventiveness of pharmaceutical polymorph patents.

2.2.2 The legal grounds for denying the inventiveness of pharmaceutical polymorph patents are highly unified. Among the eight decisions, four of them were applied the general standard of “Three-Step Approach” plus the “Unexpected Technical Effect” examination, and the rest four were applied the special inventiveness standard for chemical compounds. In both circumstances, “unexpected technical effect” was examined and denied. The decisions show that, the examination standards for inventions of pharmaceutical polymorph patents are broadly consistent between PRB and courts and among Chinese courts at all levels.

2.2.3 The examination standards for inventiveness of pharmaceutical polymorph patents have significantly changed. We notice that, the six invalidated patents involved were granted between 2000 and 2009, and that the final judgments denying their inventiveness were made between 2010 and 2016. The results reflect the substantial change of the examination standards for inventiveness of pharmaceutical polymorph patents in recent years. In the past, when the patents were granted, it was on the initial stage of polymorph studies in China. A generally accepted understanding at that time was that, even though a person skilled in the art could expect the improvement in certain properties of a compound by producing a crystal form, whether a polymorph could be obtained and what polymorph would be obtained were unpredictable for a known compound disclosed in the prior art, which might bring non-obviousness to the polymorphic invention. Therefore, the patent examination office generally recognized the inventiveness of pharmaceutical polymorph patents at that time.

In the recent years, the progress of polymorph research and development brought changes in minds of examiners and judges, who have gradually reached consensus. That is, a deeper understanding of the importance of pharmaceutical polymorphs provides stronger motivation to a person skilled in the art to study polymorphs, so that it becomes easier for a person skilled in the art to prepare polymorphs based on a known compound. Moreover, the richer experience in polymorph preparation makes it much easier to obtain a new polymorph. Therefore, the standards for inventiveness review of polymorph inventions have been significantly raised.

2.2.4 Retroactivity in inventiveness evaluation is improper. It is a natural process that technology development causes changes of patent examination practice. However, whether a stricter examination standard can apply to invalidate a patent that was granted following a less strict examination standard is an issue worthy of attention.

It is a universal practice that whether a patent has inventiveness shall be evaluated from the technical level and the cognitive level of a person skilled in the art before the filing date or the priority date. The approach of using the present stricter examination standard to invalidate granted patents appears inconsistent to the said examination norm.

III. Suggestions

As mentioned above, “unexpected technical effect” is an essential factor for inventiveness assessment of pharmaceutical polymorph patents. Accordingly, this article intends to make some suggestions from the perspective of technical effect.

1. “Qualitative change” of technical effect should be exploited more to qualify polymorph patent applications. Higher stability, purity and bioavailability of a polymorph are considered to be conventional “new performances” of a new polymorph. More improvements in these effects, charge of reductions or subtle group, will have better chances to be accepted that the new polymorph has a “new performance”, and accordingly shows a “qualitative change” of the technical effect. For example, based on the common knowledge in the art, between stability and solubility there exists a relation of mutual restriction; however, if it is proven with experimental data in the original application that a new polymorph can simultaneously improve the stability and solubility of a drug, it will be recognized that such “quantitative change” is a “unexpected technical effect” of the new polymorph.

2. “Quantitative changes” of technical effects achieved by a new polymorph has to be unexpectably. For example, the generally accepted understanding in the art is that stability and solubility are highly related. However, if it is proven with experimental data in the original application that a new polymorph has a higher solubility and a lower stability than the original one, the newly obtained increase and decrease are considered to be “unexpected technical effect” and the applicant will be accepted that such “unexpected technical effect” can be the technical effects specified in or can be directly determined from the original disclosure of application documents. According to the examination practice, any experimental data submitted after the filing date to prove the technical effect will hardly be taken into consideration for inventiveness evaluation.