

The Protection of Patents on Animal-related Inventions: Thailand's Problems and Solutions

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Abstract

This research aims to study the problem of the protection of patents on animal-related inventions under the Patent Act B.E. 2522 (1979) in order to protect inventors under the law and in accordance with international law. The author has studied the concepts and key principles on protection of patents on inventions related to micro-organisms or animal extracts under various treaties, covenants, and international law. Foreign and Thai laws have been studied and compared in order to come up with the best solutions. Thailand is now one of the parties adhered to the Agreement on Trade-Related Aspects of Intellectual Property Rights (Trips), which involves patent protection obligations, but inventions related to micro-organisms and animal extracts have not yet been covered. It was found from the study that the law on protection of patents on inventions related to micro-organisms and animal extracts in Thailand is not consistent with international treaties, covenants, or agreements. In addition, the Patent Act B.E. 2522 (1979) fails to give sufficient protection under the law to inventors. Thus, it is deemed appropriate to amend the Patent Act B.E. 2522 (1979) to be more appropriate and efficient in enabling inventors to be protected under the law with regard to their patents on inventions related to micro-organisms and animal extracts.

Keywords: Invention Patent, Patent on Animal-related Inventions, Patent Protection

Introduction

The word “patent” is derived from the Latin word “PATEREW” [Li, Hu, Cui, and Hu \(2018\)](#). It is a type of industrial intellectual property related to product invention and design. An invention patent is issued for an invention that solves difficult technical problems as it requires a specific body of knowledge and expertise. The World Intellectual Property Organization (WIPO) defines “invention” as something that is invented or created in order to obtain new products or processes or any action that enhances products or processes [Tulasi and Rao \(2008\)](#). The Department of Intellectual Property [Lanjouw, Pakes, and Putnam \(1998\)](#) defines “invention patent” in Section 3 of the Patent Act B.E. 2522 (1979) that the protection of invention patents will be effective under the law only when the invention is submitted for protection and has been registered by the Department of Intellectual Property, Ministry of Commerce. There are five main objectives of the protection of invention patents under this law, namely (1) to protect the legitimate rights of the inventor, (2) to reward the inventor, (3) to encourage new inventions, (4) to encourage disclosure of new invention details, and (5) to encourage technology transfers and foreign investments. The important condition or nature of applying for invention patent protection is that it must be a novel invention under the Patent Act B.E. 2522 (1979), Section 5 (1). Article 69 of the Constitution of the Kingdom of Thailand

also stipulates that the state has a duty to provide and promote research and development of science, technology and various arts and sciences for knowledge formation and innovation development to strengthen society and enhance the abilities of the people in the nation. In addition, the law stipulates that it is the duty of the state to develop and promote the utilization of natural resources and biological resources to promote trade, investment, and science and technology development. This will create economic value and lead the country to become a developed country and a leader in the region. An important mechanism that is necessary in the protection of intellectual property is that the country must have fair policies and laws to protect intellectual property and promote the development of all types of intellectual property.

According to the [Moon \(1980\)](#), Section 9, the following five types of inventions cannot obtain patent protection by law: (1) micro-organisms and any part thereof that exist naturally, animals, plants or animal or plant extracts, (2) scientific and mathematical rules and theories, (3) regulations for the operation of computers, (4) methods for diagnosing, treating or curing human or animal diseases, and (5) inventions that are contrary to public order or good morals, public health, or welfare. Inventions related to micro-organisms derived from animal extracts is one of the five categories that cannot be patented by law. In other words, although the findings are based on research and invention, the use of labor and intelligence of the inventor cannot be protected by law.

In this research, the author focuses on the problem of protection of invention patents related to micro-organisms and animal extracts in Thailand by studying the concepts, theories and key principles on such protection as appeared international treaties, covenants, and agreements on the protection of inventions related to micro-organisms or animal extracts. Thai and foreign laws have been studied and compared to analyze and find solutions for inventors or authors to be protected by law. The issues under this study will be presented in the following stages:

- 1) Principle on the protection of patents related to animal rights under international law
- 2) Principles on the protection of patents related to animals under foreign law
- 3) Principles on the protection of patents related to animals under Thai law
- 4) Legal problems in the protection of patents related to animals under Thai law
- 5) Conclusions and discussions

Principles on the protection of patents related to animal rights under international law

Intellectual property is a legal right that prevails over a person's intellectual creativity, whether it is invention, design, trade and service mark, geographical indication, etc. [Halewood \(1997\)](#). Intellectual property is a right that is tied to intangibles, giving it a wider scope of rights than general property. Intellectual property rights are not lost after the property is exploited, which is different from general property where property rights must be always tied to property and have clear boundaries. Acquiring individual intellectual property works requires perseverance, skills, and resources, and sometimes high investment. The rights to the works created should therefore be vested in the creator's natural rights, and the inventor or the author of the work should be protected by law.

Patents are intellectual property that is important to the industry sector. The concepts behind the patent law are (1) Natural Right Theory: This theory focuses primarily on the inventor or author to ensure the natural rights of their intellectual work. It is considered a natural justice to protect the invention created by the inventor. Therefore, the inventor is protected from that patent law, and (2) Economic Policy: This theory focuses mainly on the interests of society. An inventor is protected by law only if the invention is of benefit to society, and the society will gain benefits that are worthwhile in providing that protection. Therefore,

patents is one of the important intellectual property rights that encourages the invention of new technologies, develops and further extends ideas in a more systematic manner, benefits economic, trade and investment development, and brings positive effects on economic development.

The principle of protection of patents related to animal rights under international law began with the emergence of GATT, an attempt to reorganize global society after World War II. The United Nations was first established as the first entity to deal with economic management of international societies. After that, trade matters were fully organized under the International Trade Organization (ITO). Later, the World Trade Organization (WTO) was established. GATT was adopted as an interim basis and a mutual agreement between the states which were parties to the agreement. The protection of intellectual property was established in GATT's Article 9 on the protection of geographical Indications, Article 20(d) on protection of patents, trademarks, and copyrights, and it led to the subsequent development of various types of intellectual property protection laws. (Drahos, 1999)

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) constitutes part of the Agreement Establishing the World Trade Organization, WTO Agreement). In Annex 1C Article 2, paragraph 2 of the Agreement, it stipulates that all WTO member states be bound based on the number of parties. This agreement strikes a balance between intellectual property protection and free trade. It sets out the principle in Article 27 that member states must grant patents to protect inventions in all fields, both a patent on a product and a patent on a process. Article 27.3(b) stipulates those countries may consider providing protection for "micro-organisms" or biological processes, and Article 27.1 states that member states must grant patents for inventions. However, TRIPS has not defined the term "invention." Therefore, the meaning of this term is broad or dependent on interpretation to cover inventions in all fields of study resulting in the problem of interpretation and definition.

Regarding provision of protection of patents related to animals or animal varieties, European countries have mutually agreed to enter into the Strasbourg Convention in 1963. The convention empowers member states to opt out of animal varieties patent protection Wright (2016). European countries have chosen not to protect their animal varieties (including plant varieties and biological processes for plant or animal production). The fact that the laws of various countries prohibit an application for a patent suggests that, in theory, an animal or plant breeding process is something that may be patented. This can be seen from the German court ruling in the case of Rote Taube (Red Dove), Clark (1988), which ruled that the breeding process was an invention that could be patented although the German court rejected applications for invention patents. It can be said that failure to provide protection is due to technical problems of patent law in disclosures of invention information, not from breeding of animals.

Subsequently, the European Patent Convention was established in 1973. Exemption Chapter prohibiting the protection of animal varieties (including plant varieties and biological processes necessary to produce plants or animals) were also stipulated in Article 53(b) of the European Patent Convention. In other words, it is forbidden to issue a patent on inventions related to animal varieties. At present, there is no specific legal system to protect animal varieties. Whether an invention of an animal variety or related to any part of an animal developed by biotechnology will be legally protected depends mainly on the interpretation of the provisions of the European Patent Convention, especially the interpretation of the developed animals as "animal varieties." The term "animal varieties" is probably referring to a group of animals that are different from general animals, but the difference was so small that

the animals in the group are not classified as “species.” The term “species” may also be used to refer to any group of animals (or plants) formed by the breeding of scientists. The important problem of applying for a patent under the European Patent Convention is whether the interpretation of the provisions of Article 53(b), [Pila \(2009\)](#) which prohibits patent protection in animal varieties includes animals in general, or whether the term “animal varieties” in such provisions refer only to animals with specific traits.

There are also other treaties overseen by the World Intellectual Property Organization (WIPO), which directly protect intellectual property. The important treaties are Paris Convention for the Protection of Industrial Property and the Berne Convention for the Protection of Literary and Artistic Works. Both treaties lack details on the effective enforcement of rights and the details that outline the full protection of intellectual property rights under the jurisdiction of states parties.

Principles on the protection of patents related to animals under foreign law

The United States of America

In the United States of America, the key principle to protect inventions of the first inventor has been stipulated in the country’s constitution: “Congress has the power to promote the progress of science and the useful Arts by giving exclusive rights to authors and inventors for limited times. Therefore, a patent will be issued only to the first inventor” [Kniffen \(2011\)](#). The US patent law is partly influenced by the WIPO Model Law for Developing Countries on Inventions, which defines the term “Invention” in a similar manner to solve technical problems of applying inventions to industrial production. Invention increases human knowledge and facilitate human life. Because of this technical nature, invention can also be called “technology”, which means knowledge that may be used for production or living. Regarding the conditions for applying for the protection, the subject matter must be an invention within the definition of the US patent law prescribed in Section 101 of the US Patent Act. There are four criteria for applying for a patent: (1) it must be a patentable subject matter, a process, a machine, a manufacture, a composition of matter, or any new and useful action that improves the foregoing, (2) it must be an invention that is useful to society and the progress of the nation [Van Norman and Eisenkot \(2017\)](#), which means that it can be applied in industry, (3) it must be a novel invention, which means an invention that has never existed, appeared, been published or sold before the date of application for patent protection, and 4) it must be non-obvious, which means that it is not easy for someone with an ordinary level of expertise in the field of invention to think about or create.

For determining whether something is an invention or not, the law of the United States of America is based on the principle “It’s not important whether or not something exists naturally, but whether technical methods can be used to produce such things or whether it is something that may be of technical or industrial application [Linck, Kramer, and Ball Jr \(1998\)](#). It can be said that anything that is a direct product of nature that may be identifiable in its natural state, such as minerals, is not considered a patentable material unless such material is extracted or separated from the natural environment by technical means. For example, alkaloids in plants are considered artificial because it is a substance obtained from plant extraction using a technical process [Gryniewicz and Gadzikowska \(2008\)](#). This can be seen from the judgment of the United States Supreme Court in the *Diamond v Chakrabarty* [Douglas Robinson and Medlock \(2005\)](#) case, settled in 1980. The fact and verdict of this case was that an application for a patent on particular bacteria was submitted to the US Patent Office. The bacteria were created using microbiological processes and had the ability to remove oil stains floating on the

water surface. This would be very useful for cleaning oil contaminated water sources. The controversial issue in the consideration of such patent application was whether an organism-related invention can be legally patented. When the case went to the United States Supreme Court, the Court referred to Title 35 U.S.C. Section 101 [Stern \(2008\)](#) and ruled that the invention could be patented. The Supreme Court reasoned that patent law did not differentiate between a non-organism-related invention and an organism-related invention. The law simply stipulated that what is legally protected must be the work of man, not something that happens naturally and that patent law does not deny protection against living things. The US Supreme Court also concluded that US patent law provides protection for “anything under the sun made by man” [Daily and Kieff \(2012\)](#). This *Diamond v Chakrabarty* case was the basis for biotechnology protection in subsequent rulings in the United States and influenced the judgments with similar nature in many countries later.

Commonwealth of Australia

The Commonwealth of Australia is a federal country which is divided into 6 states and 2 territories. The Commonwealth of Australia’s Constitution provides that each state and territory has legislative, executive and judicial powers independent of the Federal Government, but state and territory laws cannot be enforced if they conflict with federal law [Lindell \(1986\)](#). The legal system used is the Common Law System. The Commonwealth of Australia law protecting invention began with the Statute of Monopolies 1623, a British law that began to protect patents in the form of monopoly [Goodman \(2006\)](#). In the mid-19th century, European countries began to pay more attention to systematic protection of intellectual property. Several European countries’ intellectual property protection laws were enacted. From the influence of British and European patent laws, the Commonwealth of Australia enacted the Patent Act 1952, after which several amendments were made to the Patent Act 1990, which has been in use until now. In addition, there is also the Patent Regulations 1991 issued under the Patent Act 1990. Such rules or regulations prescribe the process of registration of patents, which is carried out by a registrar as the Commonwealth of Australia does not provide patent protection for micro-organisms or animal extracts or any part of an animal or plant directly, but innovation patents can be applied legally in the Commonwealth of Australia.

In 2001, the Commonwealth of Australia switched from the petty patent system to the innovation patent system, which provides fast protection with low cost. Innovation patents were used to protect inventions with a higher innovation step, and inventors were protected at additional stages during product or process development. The criteria of an invention for which an innovation patent is applied is in accordance with Article 18 of the Patent Act 1990 of the Commonwealth of Australia. It has defined the nature of inventions to be protected for two types of patents: 1) Standard Patent and 2) Innovation Patent. In other words, the Commonwealth of Australia’s standard patent is an invention which is products and processes or production processes that must be of novelty, higher inventive step, and usefulness, and can be applied in industry. As for innovation patents, the invention characteristics are the same as the standard patents in almost all respects. The only difference is that an invention that is protected by an innovation patent does not require a higher innovative step compared to an existing work. Section 7(4)(5)(6) provides protection for materials, equipment, methods, and processes that result in a new or tangible physical thing. The applicant for an invention patent must demonstrate that the invention is of novelty and usefulness, with a higher innovative step compared to the works that have already existed.

Federal Republic of Germany

The Federal Republic of Germany is a party to a number of treaties, agreements and frameworks for international cooperation on patents, such as the European Convention on the Unification of Certain Points of Substantive Law on Patents for Invention of November 27, 1963, the Patent Cooperation Treaty of June 19, 1970 (PCT), the Convention on the Grant of European Patents of 5 October 1973 (EPC), and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) of April 15, 1994. The protection system must be registered and meet the specified conditions, and the law will provide better protection for the person who files the registration first, also known as the First To File System (WIPO, 2011 p.4).

The important and current patent protection law in the Federal Republic of Germany still in force is the German Patent Act of December 16, 1980 [Van Overwalle \(1998\)](#), last amended on October 8, 2017) [Conway \(2015\)](#) which stipulates that invention patents must not be contrary to public policy or public morals and can be applied commercially. The things that cannot be patented by law are plants and animal varieties or the main biological processes of plants and animals, but it does not include the methods of rearing such animals or plants. However, the law requires that a patent be granted for an invention related to plants or animals if the key elements in the invention are not plants or animals generally diverse in nature. Moreover, the registration must be free from microbiological concerns; that is, the technical process or products derived from plants or animals do not come from plants or animals already diverse in nature.

Principles on the protection of patents related to animals under Thai law

Thailand began providing patent protection for the first time in 1979 under the Patent [Kwon \(1994\)](#), amended twice in 1992 and 1999. At present, Thailand is not participating in any international agreements on the protection of patents, whether it is the Paris Convention for the Protection of Industrial Property or the Patent Co-Operation Treaty or any other agreement. The only international patent agreement to which Thailand is currently a member is TRIPS, which is annexed to the Agreement on the Establishment of the World Trade Organization. In essence, the amendment under the Patent Act (No. 2) 1992 stipulates principles on the protection of invention or product design, which is an invention that no one has ever achieved before. It must also be an invention with a higher inventive step that is non-obvious to a person with a normal level of expertise and an invention that can be applied in industry, handicrafts, agriculture, and commerce. In this law, patents are divided into two types: invention patents. and product design patents. A qualified invention to be patented must consist of three important characteristics: firstly, it must be a novel invention, meaning it must not be an invention that has already existed; secondly, it is created using an inventive step, meaning an invention that is non-obvious to a person with general expertise for that type of work; thirdly, an invention with industrial applicability.

Meanwhile, unpatentable inventions have been stipulated in Article 9: (1) micro-organisms and any part of micro-organisms that exist naturally, animals, plants, or animal or plant extracts; (2) scientific and mathematical rules and theories; (3) information systems for computer operation; (4) methods for diagnosing, treating or curing human or animal diseases; and (5) inventions that are against public order, good morals, public health or welfare. Thus, it can be said that the patent law of Thailand does not provide protection for biotechnology (including any invention related to animals), whether it is naturally occurring or man-made [Ford, Wilson, Bunjumong, and von Schoen Angerer \(2004\)](#). Although Thailand has adopted foreign law or foreign court rulings that provide protection for biotechnology, which includes

invention of animal varieties, it would still not be able to fully protect the animal varieties in Thailand because the technological development of Thailand is not high enough to research new animal varieties. A lack of protection of patents related to animals is an important problem in Thailand. The author will discuss this problem next to find the appropriate solutions for Thailand.

Legal problems in the protection of patents related to animals under Thai law

From the study, it was found that there are important problems that affect the law and policy on the protection of rights in animals or animal extracts as follows:

4.1) First is the problem of limited patent certification in micro-organisms or animal extracts which is contrary to or inconsistent with the Constitution of the Kingdom of Thailand. As Section 9 (1) of the Patent Act B.E. 2522 [Daniel Robinson and Kuanpoth \(2008\)](#) stipulates that micro-organisms and any parts of micro-organisms that exist naturally in animals or animal extracts cannot be protected by law, this causes problems and obstacles in the development of animal genetic engineering technology for the food manufacturing industry or conservation of rare animals in Thailand. In other words, even if inventors use knowledge, skills, or expertise to invent or genetically modify animals that are resistant to animal diseases for productivity in the industry effectively, those inventors, whether farmers, breeders, scientists or veterinarians, cannot apply for the protection of patents on inventions related to animals because the inventions require the use of natural animal micro-organisms or extracting certain types of substances or genes from animals, to which Section 9 (1) of the Patent Act B.E. 2522 (1979) does not provide protection despite the fact that it is a property right protected by the Constitution. Thus, this clearly causes problems to the protection of patents on inventions related to micro-organisms or animal extracts that have been newly invented in Thailand.

4.2) Second is the problems in applying for a patent on micro-organisms or animal extracts that are highly innovative. As the Patent Act B.E. 2522 (1979) does not provide protection to patents on inventions and research related to animal varieties or animals produced from micro-organisms or animal extracts, it creates a legal gap. In other words, private entities or multinational companies bring such varieties or animals to submit an application for a patent in a foreign country such as the United States, the Federal Republic of Germany, or some EU countries which are parties to the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), which stipulates that states parties may grant patents to protect inventions in all fields, both for product patents and process patents (Article 27) and requires states parties to consider protecting “micro-organisms” or biological processes. Therefore, the fact that the Patent Act B.E. 2522 (1979) does not have consistent principles with this international agreement has resulted in legal problems regarding the protection of patent applicants for the protection of micro-organisms or animal extracts, which clearly arises from new inventions.

4.3) Third is the problems that inventors cannot apply for a petty patent of micro-organisms or animal extracts despite using his knowledge, effort, and investment of equipment and expenses to produce effective works that can be industrially applied and have economic value for the author or inventor as the Patent Act B.E. 2522 (1979) does not provide protection for patents as well as petty patents for the invention related to animal varieties or animals that consist of micro-organisms or animal extracts. Therefore, such inventions can be easily copied and exploited by others. This is a serious infringement of intellectual property rights and clearly poses a problem with protection of patents in micro-organisms or animal extracts.

Conclusions and discussions

The study of animal patent protection law involves investigation of international law on protection of patents related to micro-organisms or animal extracts. The scope for the study of international law principles and guidelines for domestic patent protection, as well as problems and limitations in providing patent protection under the law have been determined. The principles of domestic laws, legal systems, problems, and limitations, as well as guidelines for protection in foreign countries and in Thailand will be demonstrated as follows:

Table 1 Problems and solutions to protection in foreign countries

| No. | Country | Legal system | Principles of domestic laws | Issues | Protection guidelines |
|-----|-------------------------------|--------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| 1 | The United States | Common Law | The Patent Act of 1952 | Interpretation of “invention” (Article 100) as creation or invention | The nature of the enactment is broad and unclear, and protection depends on interpretation. |
| 2 | The Commonwealth of Australia | Common Law | The Patent Regulation of 1991 issued by virtue of the Patent Act of 1990 | It does not provide protection of patents related to microorganisms or animal extracts or any part of an animal or plant | Innovation patents can be applied by law. |
| 3 | Germany | Civil Law | German Patent Act of December 16, 1980 (Patentgesetz), last amended on October 8, 2017) | Things that cannot be patented by law are plants and animals or the main biological processes of plants and animals, but does not include methods of raising animals or plants. | Patent protection is provided on methods of raising animals or plants. |
| 4 | Thailand | Civil Law | The Patent Act of 1979 | An unpatentable invention includes microorganisms and any parts of microorganisms that exist in nature, animals, plants, or animal or plant extracts. | No legal protection have been provided. |

From Table 1, after a comparative study of protection principles, the principles of protection of patents related to micro-organisms or animal extracts according to the laws of each country do not directly provide protection for micro-organisms and animal extracts. In the case of USA, which is a country that uses the Common Law System, the principles of law are broadly defined and their application depends on interpretation. For Australia, although the principles of protection of patents related to micro-organisms or animal extracts are not directly defined, patents for higher innovative steps related to plants or animals can be applied. For countries that use the Civil Law System like Germany, plants and animal varieties or the main biological processes of plants and animals cannot be patented under the law, but this does not include methods of raising animals or plants, for which legal protection can be applied.

For Thailand, which is a country that uses the Civil Law System, legal protection cannot be applied for micro-organisms and their components that are naturally present, animals, plants,

or animal or plant extracts. The guidelines or exceptions that can be filed for protection are not stipulated in the statutory provisions. The problems and limitations of the Civil Law System and Common Law System can be summarized as follows:

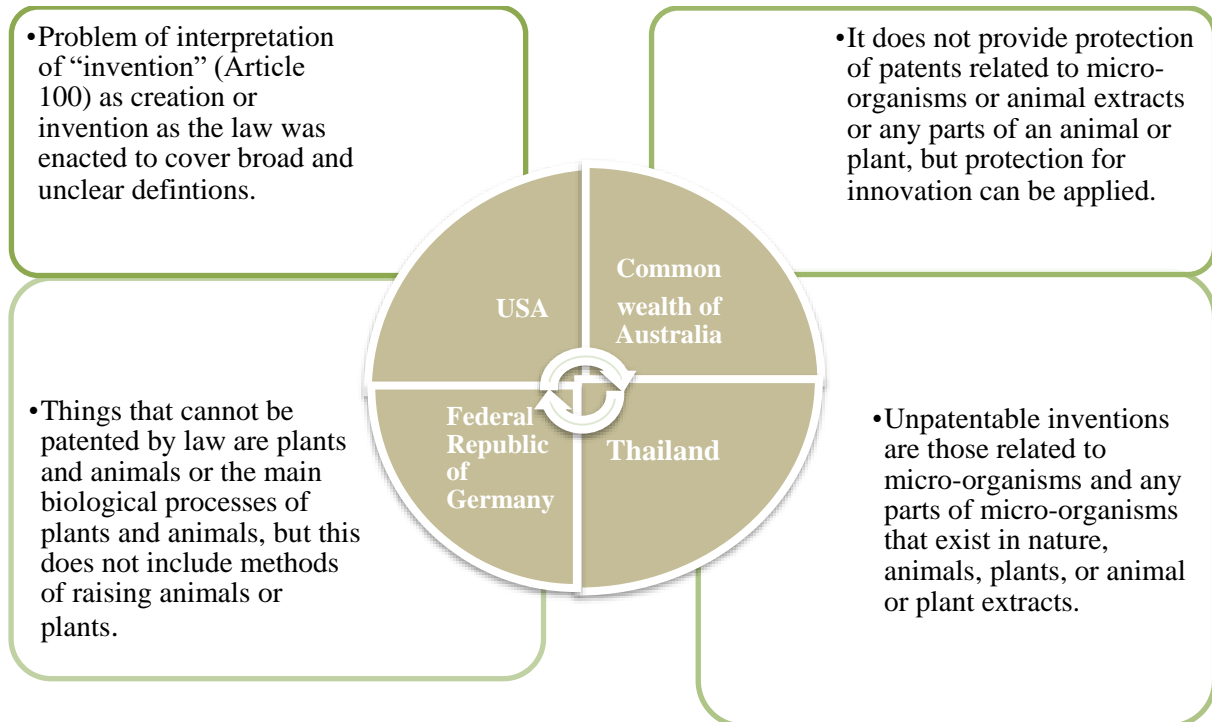


Figure 1: Comparison of problems and limitations of each country

Thailand’s protection problems and solutions

From research studies of the principles on the protection of patents related to animals under the law of Thailand, there are 3 main problems: (1) The fact that micro-organisms or animal extracts cannot be protected under the law are contrary to or inconsistent with provision of protection according to the Constitution; (2) Inventors are unable to obtain patents on highly innovative inventions related to micro-organisms or animal extracts; (3) Inventors are unable to obtain petty patents related to micro-organisms or animal extracts. The problems have affected Thailand in various dimensions, which can be discussed as follows:

Table 2 Thailand’s protection problems and solutions

| Thailand’s problem | Effects on Thailand | Solutions |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) The fact that microorganisms or animal extracts cannot be protected under the law are contrary to or inconsistent with provision of protection according to the Constitution. | (1) The laws in Thailand are inconsistent with international law or obligations. | (1) Definitions of the words “micro-organism” and “extracts” must be added in Section 3 of the Patent Act B.E. 2522 (1979). |
| (2) Inventors are unable to obtain patents on highly innovative inventions related to micro-organisms or animal extracts. | (2) The principles on patent law are contrary to or inconsistent with the intent of the Constitution. | (2) An exception must be made for inventions that rely on advanced knowledge and technology, and the Minister must be empowered to stipulate the Patent Act B.E. 2522 (1979), Section 9. |
| (3) Inventors are unable to obtain petty patents related to micro-organisms or animal extracts. | (3) There is a lack of opportunities to develop or build on works that promote economy, innovation and technology. | (3) The provisions of Section 65 undecim must be added in the Patent Act B.E. 2522 (1979), prohibiting the enforcement of Section 9 (1) in Chapter 3 bis on petty patents. |
| | (4) Inventors lack motivation to invent new works in Thailand. | |

(5) Inventors bring their works to be registered in foreign countries, making Thailand lose benefits.

Table 2 shows the major problems of Thailand. If not corrected, it will affect Thailand in the following dimensions:

The laws in Thailand are inconsistent with international law or obligations

As Thailand is not a party to conventions that directly protect patents, such as the Paris Convention for the Protection of Industrial Property and the Patent Co-Operation Treaty, although there is a law to protect domestic patents, it does not cover micro-organisms or animal extracts and protection cannot be applied as specified in Section 9 (1) of the Patent Act B.E. 2522 (1979). In addition, patents on highly innovative inventions related to micro-organisms or animal extracts cannot be obtained and inventors cannot apply for a petty patent related to micro-organisms or animal extracts. With such problems, the protection principle under the Patent Act B.E. 2522 (1979) does not cover the principle of the protection of patents related to animals. In addition, not being a party to conventions that directly protect patents causes Thailand to fail to comply with the patent protection criteria in accordance with the laws of many civilized countries. As a result, the practice is inconsistent with international law.

The principles on patent law are contrary to or inconsistent with the intent of the Constitution.

The Patent Act B.E. 2522 (1979), the primary law for the protection of patents under Section 9 (1), stipulates those inventions related to micro-organisms and any components of natural micro-organisms, animals, plants, or animal extracts, or plants including methods for diagnosing, treating, or curing human or animal diseases are not protected by the said law and a patent under Section 5 and a petty patent under section 65 bis cannot be applied. When the law does not provide protection to patent applicants, it will result in inventors being unable to receive intellectual property protection in accordance with the intent of Article 69 of the Constitution, which has stipulated that it is the state's duty to promote the utilization of natural and biological resources to facilitate trade, investment, science and technology development, which will create economic value and lead the country to become a developed country and a leader in the region. An important mechanism that is necessary in the protection of intellectual property is that there must be fair policies and laws to protect intellectual property and promote the development of all types of intellectual property. The constitution, which is the supreme law of the country, guarantees and promotes the development of all types of intellectual property, including patents on micro-organisms or animal extracts, but the Patent Act B.E. 2522 (1979), Section 9(1) does not provide protection for the applicant for a patent related to micro-organisms or animal extracts, so inventors cannot be protected by law. It can be said that the Patent Act B.E. 2522 (1979) contradicts the Constitution which is the highest law. Therefore, failure to protect the rights of micro-organisms or animal extracts is unlawful. It is deemed appropriate to amend the definitions of "micro-organism" and "extracts" in Section 3 of the Patent Act B.E. 2522 (1979) so that they will be protected in accordance with the intent of the Constitution as shown in the diagram below:

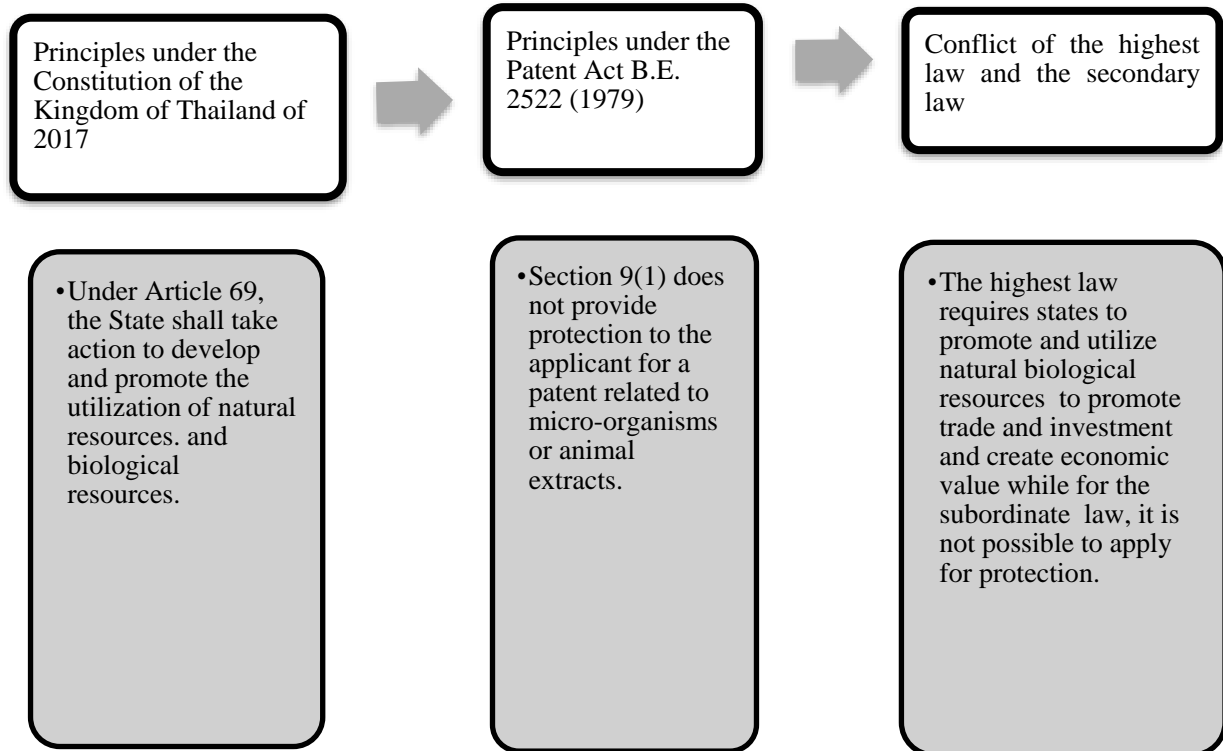


Figure 2: The primary law for the protection of patents

There is a lack of opportunities to develop or build on works that promote economy, innovation and technology.

As Thailand was unable to obtain a patent on highly innovative inventions related to micro-organisms or animal extracts and inventors cannot apply for a petty patent related to micro-organisms or animal extracts, it makes inventors or authors of the work unable to apply for protection against their inventions. Moreover, the work is not developed or built on to be at a higher level and is not applied industrially, and inventors miss the opportunity to develop innovations and technology related to plants or animals. From the study of the problem, it can be seen that the absence of a law to protect patents on micro-organisms or animal extracts will affect the inventors. Also, educational institutions or knowledgeable and competent independent academics cannot develop works or conduct research at a higher level because there is no law to support or protect them. Therefore, the lack of legal support leads to a lack of opportunities for economic development and advancement of the country.

Inventors lack motivation to invent new works in Thailand.

Table 2 summarizes problems and effects on Thailand if inventors are unable to obtain a patent on inventions with higher innovative steps, including application for a petty patent of micro-organisms or extracts derived from animals as the Patent Act B.E. 2522 (1979) does not provide protection. Thus, inventors of works related to micro-organisms or animal extracts are not legally endorsed, leading to a lack of motivation for academics or inventors to invent, study, research and create new works that will benefit society, promote industrial applicability, and create value for the Thai economy. This is very contradictory to foreign protection -- while it is not possible to apply for statutory protection for patents related to animals, it is still possible to apply for innovations related to micro-organisms or animal extracts, such as the Australian Patent Protection Act, etc. In this country, when someone invents or creates works, there is a law to support and develop the works to have value, industrial applicability, and generate

income for the author of the work. As a result, the inventor is determined to develop their own works to be accepted and promote free competitions, which will be truly beneficial to society.

Inventors bring their works to be registered in foreign countries, making Thailand lose benefits.

From the issues shown in Table 2, when the invention is not certified by law in Thailand even though such works can be further developed to create economic value, the author of the work tries to have it registered or used in a foreign country because there are protection measures or mechanisms leading to the protection of rights for inventors or authors. As a result of Thailand's lack of legal protection measures or its inability to apply for patent protection on micro-organisms or animal extracts, the work will be sold or registered in foreign countries that provide patent protection for micro-organisms or animal extracts.

Solutions

1) The definitions of “micro-organism” and “extracts” in Section 3 of the Patent Act of 1979 shall be added as follows:

“Microorganisms” refers to microscopic organisms that cannot be seen by the naked eye, bacteria, archaea, fungi, and yeast that are naturally presented in plants or animals.

“Extract” refers to chemicals or chemical supplies obtained from the extraction by scientific and technological processes from natural plants or animals.

2) Section 9(1) of the Patent Act B.E. 2522 (1979) shall be repealed as follows:

Former texts

Section 9 The following inventions are not protected by the Act.

(1) Micro-organisms and any part of micro-organisms that exist naturally, animals, plants or animal or plant extracts.”

Proposed texts

Section 9 The following inventions are not protected by the Act.

(1) Micro-organisms and any part of micro-organisms that exist naturally, animals, plants or animal or plant extracts unless it is an invention that relies on knowledge and advanced technology as prescribed by the Minister.”

3) The provision of Section 65 undecim in the Patent Act of 1979 should be added as follows:

“Section 65 undecim: The provisions of Section 9 (1) shall not apply in Chapter 3 bis on petty patent.”

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