# IPR Protection for New Traditional Knowledge: With a Case Study of Traditional Chinese Medicine

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Protection of traditional knowledge by intellectual property rights ("IPRs") is now a debatable issue on the international forum. In the light of the current difficulty in providing complete protection for traditional knowledge, this article raises a concept of "new traditional knowledge" and tries to justify possible IPR protection for it. There are four parts to this article. The first part introduces concepts of traditional knowledge and new traditional knowledge; the second seeks possible IPR protection for new traditional knowledge; the third part, with a case study of patents of traditional Chinese medicine in China, looks at possible ways by which new traditional knowledge can be produced and may be patented; and the final part is the conclusion.

## Concepts of Traditional Knowledge and New Traditional Knowledge

The concept of traditional knowledge is widely used today to refer to knowledge having a long tradition and/or relevant to indigenous people. Though criticised as perhaps implying the disadvantage of traditional knowledge when compared with mainstream Western knowledge or scientific knowledge, this concept has been becoming popular in modern international political and academic contexts and, at the same time, has been endowed with new connotations.

Traditional knowledge is one of several concepts that have been evolving recently to refer to almost the same subject-matter.[1] These serial concepts include "folklore", "indigenous (and local) knowledge", "indigenous heritage", and "indigenous cultural and intellectual property".[2] There are certain differences and overlaps among these concepts,[3] especially when they are used by different international bodies.

For example, the Convention on Biological Diversity ("CBD") describes traditional knowledge in its main provision dealing with traditional knowledge, Art.8(j), as "knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles",[4] and explains that "[d]eveloped from experience and gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation".[5] Moreover, "It [traditional knowledge] tends to be collectively owned and takes the form of stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds".[6]

According to the World Intellectual Property Organization ("WIPO"), however, traditional knowledge refers to "tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and all other tradition-based innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields".[7] Here, "tradition-based" means "knowledge systems, creations innovations and cultural expressions which: have generally been transmitted from generation to generation; are generally regarded as pertaining to a particular people or its territory; and are constantly evolving in response to a changing environment".[8]

Obviously, the different concepts of traditional knowledge used by the CBD and WIPO respectively have different emphases, and that used by the latter has a comparatively broader scope. Therefore this article will use the concept of traditional knowledge as described by the WIPO.

As elucidated by the WIPO in its explanation of the concept of "tradition-based", as cited above, traditional knowledge has been evolving all the time. In other words, traditional knowledge is dynamic and not fixed. Moreover, when compared with other kinds of knowledge, traditional knowledge is not necessarily old and inferior, instead, it can be new and productive. From here, logically, emerges the concept of "new traditional knowledge".

This article tries to describe new traditional knowledge as new knowledge created by new generations who base or partially base their creations on traditional knowledge. Basically new traditional knowledge has the following characteristics: (1) it may involve a process or a product; (2) it can be expressed in one of the most used languages worldwide or in one indigenous, local or tribal language; and (3) it has been and will remain part of traditional knowledge, on which other new traditional knowledge could be created.

*This article is developed essentially from a Working Paper for the Institute of Advanced Studies, United Nations University. The author would like to thank IAS/UNU for granting him a Postdoctoral Fellowship for the year 2001–2002 which made this research possible.*

1 See Michael Blakeney, "The Protection of Traditional Knowledge under Intellectual Property Law" [2000] E.I.P.R. 251 at pp.251–252.

2 See, *e.g.*, Blakeney, *ibid.*; WIPO (World Intellectual Property Organization), *Intellectual Property Needs and Expectations of Traditional Knowledge Holders. WIPO Report on Fact-Finding Missions on Intellectual Property and Traditional Knowledge (1998–1999)*, Geneva, April 2001, at pp.25–26; and Michael Halewood, "Indigenous and Local Knowledge in International Law: A Preface to *Sui Generis* Intellectual Property Protection" (1999) 44 McGill L.J. 953 at pp.957–961.

3 See WIPO, n.2 above, at pp.21–26.

4 Convention on Biological Diversity ("CBD"), Art.8(j).

5 CBD, "Art 8(j): Traditional Knowledge, Innovations and Practices: Introduction", at *www.biodiv.org/programmes/socio-eco/traditionalidefault.asp*

6 *ibid.*

7 WIPO, n.2 above, at p.25.

8 *ibid.*

Then a new question may arise: why develop traditional knowledge? This can be justified in that, although the protection of traditional knowledge is now one of the hottest issues in the world and multiple international conventions and organisations are working on it, at present few legal instruments can preclude substantially public and/or private bodies from exploiting traditional knowledge and related resources without fair compensation; therefore it may be useful to "isolate" the newly developed traditional knowledge from the "old" traditional knowledge already in the public domain and protect it first by the present IPRs, lest it continue to be "pirated". Additionally, if (part of) new traditional knowledge can be protected by the present IPRs, the experience and lessons learnt within the process can hopefully be of help for the IPR protection of general traditional knowledge.

However, one may doubt (1) whether new traditional knowledge is still traditional knowledge, and (2) whether stakeholders of traditional knowledge, a disadvantaged group, can still be holders of new traditional knowledge and benefit from it. Though it is true that new scientific or technological elements may be involved in the development of new traditional knowledge and the new knowledge is probably not in its original forms and may go beyond the control of its traditional holders, new traditional knowledge can still be deemed as traditional knowledge, *i.e.* as a kind of newly developed traditional knowledge. As discussed above, traditional knowledge has always been evolving and is ready to absorb any elements in its development.

As to the second question, similarly the answer is "yes", at least partially. However, this positive reply will depend on several necessary backup elements, including, *inter alia*, (1) active participation of stakeholders of traditional knowledge in the activities of both prospecting and commercialisation of (new) traditional knowledge, (2) a fair mechanism of access to (new) traditional knowledge (and related resources) and benefit sharing among right holders, and (3) adoption of the IPR system, with necessary *sui generis* right(s).

## Protection of New Traditional Knowledge by IPRs

### When IPR encounters traditional knowledge

Unlike many other property rights which may originate as early as the time of Roman law, IPR is a special kind of property right with a history of only several hundred years. Historically speaking, the development of IPRs is closely related to trade activities and has capitalism as its background. For example, patent law appeared first in Venice in the fifteenth century and in England at beginning of the eighteenth century respectively as an accompaniment to the city or country's rapid business development.[9] Since then, with the industrial revolution and the high-technology revolution from the eighteenth to the twentieth century, IPRs have become more and more prevalent.

In the course of the development of IPRs, there have been numerous stories about struggles for profit yielded by patents and other kinds of IPRs. Having learnt about this, one might be ready to accept one of the basic principles on which the whole IPR system is based: IPR tries strenuously to make a balance between intellectual creators and society, *i.e.* while it tries to reward intellectual creators by patenting them an exclusive right for a certain time to earn what their creations deserve from society, it must guarantee that such privileges shall not hold back the development of science, technology and society. Therefore IPRs are granted only to part of newly developed knowledge and reluctantly to that already in the public domain.

This principle is illustrated clearly by TRIPs, which states: "The protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation . . . to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."[10] Based on this principle, accordingly, new kinds of IPRs, such as the right to trade secrets (undisclosed information), the plant breeder's right, and database rights, have been adopted gradually by the system. This indicates further that the IPR system is dynamic and willing to create new rights for new intellectual productions.

However, it should be admitted that the IPR system is ideologically harmonised with the aims of modern science and technology, which act as the basis of the business world. Therefore one might have limited optimism with regard to possible IPR protection for traditional knowledge. As David Downes has argued, "while IPR systems may treat indigenous and Western knowledge alike in most cases, the systems operate as a whole to discriminate in effect against holders of informal knowledge as a group".[11] Consequently, it is widely held that traditional knowledge can hardly assume the IPR system as a shelter. However, this opinion deserves analysis.

Generally speaking, according to the principles of IPRs, the majority of traditional knowledge falls into the public domain, because of either having been used for decades or even centuries, or public documentation. Thus, in most cases, it would be rather difficult for traditional knowledge to earn IPR protection. But this is not to say that traditional knowledge can scarcely resort to the IPR system at all. In fact, theoretically there are two basic approaches to adjusting possible IPR protection for traditional knowledge: (1) to modify the IPR system, *e.g.* to adopt new *sui generis* right(s); and (2) to develop traditional knowledge into new traditional knowledge to meet the provisions of the IPRs.

9 For the commercial activities in Venice from the eleventh to the fifteenth century and those in England in the seventeenth century, see Ray Huang, *Capitalism and the 21st Century* (1993), Chs 2 and 4.

10 TRIPs, Art.7. One can also compare the holding of the Supreme Court of the United States: "A patent is not a hunting license. It is not a reward for the research, but compensation for its successful conclusion . . . " 383 U.S. 519 at 536; 148 U.S.P.Q. (BNA) 689 at 696.

11 David R. Downes, "How Intellectual Property Could Be a Tool to Protect Traditional Knowledge" (2000) 25 Colum. J. Envtl. L. 253 at p.278.

Let us examine the former first. It is true that today many people and organisations are interested in creating new *sui generis* right(s) or even modifying principles of the IPR for the protection of traditional knowledge, but the result is not encouraging. One can realise this by studying a famous example, the farmer's right. From its long and distressful evolution, one can appreciate the difficulty in appealing to new kind of *sui generis* right within the present legal or IPR framework for subject-matters not created by modern science and technology and relating loosely to business and trade. Unfortunately, the situation may appear to be identical or similar for traditional knowledge. In other words, it is hardly believable that the IPR system is ready to yield so easily and make room as an exception for traditional knowledge. From the point of view of evolution, up to about five hundred years' history has moulded the IPR system gradually into its present configuration, and, understandably, interested people and organisations may, at least in the near future, reverse this trend only rarely, or possibly not at all.

Protection of traditional knowledge by *sui generis* rights or privileges not enjoyed by general knowledge has been criticised as lacking a moral basis, *e.g.*:

> "The typical claim of indigenous 'intellectual property' relating to folk varieties seeks even more expansive monopoly control . . . a patent gives the inventor an exclusive right to use a specific invention for a limited time . . . In contrast, a number of advocates of 'farmers' rights' hold that communities in which useful folk varieties or indigenous knowledge have originated should maintain the exclusive right to control their use in perpetuity, whether they were developed 10 years ago or 1000. They do not explain why such a community should be entitled to a special right not available to others whose inventive predecessors gave the world comparable benefits. Because it is difficult to establish a moral basis for such a distinction, the human right-based rationales for indigenous intellectual property rights are unlikely to succeed."[12]

Therefore, logically, if traditional knowledge wants to get IPR protection, at least at the present stage, it had better adjust itself to meet the basic provisions of the IPRs. This suggests that traditional knowledge should evolve actively to become *new traditional knowledge* in order to get IPR protection.

## How new traditional knowledge appeals to IPRs

To explore the possibility of protection of new traditional knowledge by IPRs, it may be useful to re-examine the explanation of traditional knowledge by the WIPO. Leaving out the adjective "tradition-based", one can see subject-matters of traditional knowledge as including: "literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks, names and symbols; undisclosed information; and all other . . . innovations and creations resulting from intellectual activity in the industrial, scientific, literary or artistic fields".[13] Apparently, most of these subject-matters (with few exceptions like scientific discoveries) can meanwhile be subject-matters of IPRs. This means that, by meeting the conditions of each IPR, many kinds of new traditional knowledge can get IPRs, including such as patent rights, copyright, the right to trade secrets, trade mark rights and geographical indications.

For example, for copyright, the Berne Convention provides that: "The expression 'literary and artistic works' shall include every production in the literary, scientific and artistic domain, *whatever may be the mode or form of its expression* . . . "[14]; "it shall be a matter for legislation in the countries of the Union to determine the extent of the application of their laws to works of applied art and industrial designs and models . . . ".[15] These sub-articles, together with the UNESCO-WIPO Model Provisions for National Laws on the Protection of Expressions of Folklore against Illicit Exploitation and Other Prejudicial Actions (1985), are applicable to literary or artistic works of new traditional knowledge.[16] At a national level, the corresponding (new) traditional knowledge has also been covered by copyright law in certain countries, though various problems still exist. For example, in China the copyright law protects "oral works".[17]

The right to trade secrets (undisclosed information) is established by TRIPs as follows: "Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices so long as such information: (a) is secret . . . (b) has commercial value because it is secret; and (c) has been subject to reasonable steps under the circumstances . . . ".[18] For traditional knowledge, especially traditional medicinal knowledge, it may be more common and convenient to be protected by this right. For instance, secrets of a special kind of traditional medicine or prescription, such as traditional Chinese medicine, may be kept as know-how for hundreds of years.[19] It follows that new traditional knowledge can be easily protected by this right, provided that it meets the necessary conditions.

12 David R. Downes, Untitled Comments on D. Cleveland and S. C. Murray, "The World's Crop Genetic Resources and the Rights of Indigenous Farmers" (1997) 38 *Current Anthropology* 477 at 499, citing Rosemary J. Coombe, "Intellectual Property, Human Rights and Sovereignty: New Dilemmas in International Law Posed by the Recognition of Indigenous Knowledge and the Conservation of Biodiversity" (1998) 6 Ind. J. Global Leg. Stud. 59 at 86–87.

13 WIPO, n.7 above.

14 Berne Convention for the Protection of Literary and Artistic Works (amended on September 28, 1979), Art.2(1) (*emphasis added*).

15 *ibid.*, Art.2(7).

16 For the protection of traditional knowledge by copyright, see Angela R. Riley, "Recovering Collectivity: Group Rights to Intellectual Property in Indigenous Communities" (2000) 18 Cardozo Arts & Ent. L.J. 175 at 185–198.

17 See Copyright Law of the People's Republic of China (1990, revised in 2001), Art.3(2).

18 TRIPs, Art.39.2.

19 In the field of traditional Chinese medicine, many (trade) secrets or know-hows have been kept as "family secrets" and have been passed down from generation to generation within a family.

Trade marks are used to distinguish different kinds of goods or services, and the right to a trade mark is defined by TRIPs as "the exclusive right to prevent all third parties not having the owner's consent from using in the course of trade identical or similar signs for goods or services which are identical or similar to those of which the trade mark is registered where such use would result in a likelihood of confusion".[20] If new traditional knowledge is commercialised into products or services, it can surely get trade mark protection.[21]

What may be more useful for new traditional knowledge is the application of geographical indications of origin. As defined by TRIPs, geographical indications are "indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin".[22] The right to geographical indications was originally introduced into IPR for the protection of wine and spirits, which have a close relationship with traditional knowledge. Therefore new traditional knowledge can hopefully take advantage of this right.

Downes describes the relationship between the right to geographical indications and traditional knowledge as follows:

> "Indicators of geographic origin are especially suitable for use by indigenous and local communities since they are based upon collective traditions and a collective decision-making process; they protect and reward traditions while allowing evolution; they emphasize the relationships between human cultures and their local land and environment; they are not freely transferable from one owner to another; and they can be maintained as long as the collective tradition is maintained."[23]

One successful example of using geographical indications to profit from traditional knowledge is the one by local Indian artisans in the southwestern region of the United States. They earn as much as US$800 million a year from the commercial sales of arts and crafts with distinctive styles or characteristics typical of the local tribes.[24] For this, the New Mexico local government has enacted an Indian Arts and Crafts Protection Law to guarantee that the product, such as Pueblo pottery or silver jewellery, is "an authentic, Indian, hand-made piece".[25]

## Patenting New Traditional Knowledge: A Case Study of Traditional Chinese Medicine

This part, with a case study of traditional Chinese medicine, explores the possible protection for new traditional knowledge by patent. As one main kind of IPR, patent does not discriminate between inventions for technological and other reasons.[26] Therefore any inventions of new traditional knowledge can be patented, provided that they meet the patentability criteria.[27]

### Traditional Chinese medicine and its development

Having a recorded history of more than three thousand years, China has a civilisation with a great deal of traditional knowledge. Traditional Chinese medicine ("TCM")[28] is one of such precious jewels. As an independent medical system, TCM is composed of not only medicine and treatment, but also a living philosophy. The practice of TCM is still based on traditional TCM concepts and theories. For example, the traditional theory of "Jing-Luo"[29] remains the basis for medicine, acupuncture and naprapathy.

Like other kinds of traditional knowledge, TCM has been evolving and has created or introduced much "new" knowledge along its history. For instance, many kinds of "foreign" herbs, plants or minerals not originally planted or located in China were introduced as candidates for "new" medicines, like myrrh, crocus, frankincense, and areca.[30] Today, some TCM researchers even want to merge Western medicine into TCM according to TCM theories.[31] In short, new knowledge of TCM has been created continually, as indicated by the kinds of TCM.[32]

Since the 1950s, with the application of modern chemistry, biology and pathology, TCM has absorbed many new theories and techniques for its research and clinical practices. For example, biochemistry has been applied to TCM for its separation and purification by isolating the active molecules for target diseases, and molecular pathology for building up pathological models. The process is generally called the "modernisation of TCM" and in the process much new knowledge of TCM has been invented.

### Patentability of TCM

Patenting TCM must comply with the Patent Law of China. The law was first adopted in 1984 and has been

20 TRIPs, Art.16.1

21 For the application of trade mark rights to traditional knowledge, see David R. Downes, n.11 above, at pp 269–274

22 TRIPs, Art.22.1.

23 Downes, n.11 above, at p.270

24 See *ibid* at pp 271–272

25 *ibid*

26 See TRIPs, Art.27.1

27 However, criticism still exists. For example, it has been observed that "patentability under current intellectual property law is systematically biased against the innovations and knowledge of indigenous and farmers' communities" Naomi Rohr-Arriaza, "Of Seed and Shamans: The Appropriation of the Scientific and Technical Knowledge of Indigenous and Local Communities", (1996) 17 Mich. J. Int'l L. 919 at 930–931.

28 In China the term used more frequently is "Chinese medicine", not "traditional Chinese medicine".

29 According to the theory, the "Jing-Luo" is an internal communication system within the human body for "Qi", which is the basis of many TCM activities, such as the "Qi-Gong" practice

30 See Xiaoying Duan, "On Systemization of Western Medicine into Traditional Chinese Medicine", (1995) 2 *Journal of Traditional Chinese Medicine of Henan* 22–24

31 See *ibid*

32 The recorded kinds of TCMs in *Herb of Shennong* (Shen nong Bencao Jing, before 200 B.C.), p.365; *Sketch of Herb* (Bencao Gangmu, 1593 AD), p.1892; *Dictionary of TCM* (Zhongyao Da Cidian, 1977–79), p.5767; *Herb in China* Zhongnua Bencao, 1998), p.8980. See *ibid*

revised twice in 1992 and 2000 respectively in order to harmonise it with current international standards. Similarly to TRIPs,[33] the Patent Law of China describes patentability as "novelty, inventiveness and practical applicability",[34] and explains: "'Novelty' means that, before the date of filing, no identical invention . . . has been publicly disclosed in publications in the country or abroad or has been publicly used or made known to the public by any other means in the country . . . ".[35] "'Inventiveness' means that, as compared with the technology existing before the date of filing the invention has prominent substantive features and represents a notable progress . . . ".[36] "'Practical applicability' means that the invention . . . can be made or used and can produce effective results."[37] This provision delineates the conditions that patents of TCM should meet. Among these, "novelty" and "inventiveness" are especially important.

During its more than two-thousand-year long history, TCM has been very well documented and much knowledge of TCM has been either "publicly disclosed in publications" or "publicly used or made known to the public by any other means in the country". Consequently, the majority of the knowledge of TCM cannot fulfil the novelty criterion of patentability. But on the other hand, owing to the long tradition of conservation of the know-how of TCM within families, as stated above, there is still much knowledge of TCM that has not lost its novelty. Additionally, with respect to new knowledge of TCM which has not been publicly disclosed in publications or been made known or used before, the problem of novelty does not exist.

According to the patent law, patentable inventions involve both process and product. This is also true for TCM inventions. The process may involve the application of modern technologies, such as those of physics, chemistry, biology or their combinations, to isolate, purify, identify or testify the active parts of TCM, and the products may involve those produced by the corresponding processes. Detailed pathways for TCM to fulfil the inventiveness criterion will be illustrated later by concrete examples.

Additionally, the enabling of TCM inventions should be published, which means that "The description (of the patent application) shall disclose the invention . . . in a manner sufficiently clear and complete so as to enable a person skilled in the relevant field of technology to carry it out . . . ".[38] This is crucially necessary for inventions of (new) traditional knowledge, which may be described originally in one local language or with regional parameters.

## TCM patents in China (1985–2001)

To investigate TCM patents in China since 1985, a statistical method is employed which is based on an online searching service of the State Intellectual Property Office ("SIPO") of China.[39] Because TCM may extract its medicines from multiple resources, including plant (herb), animal and mineral, the international classification numbers for patents of TCM include, among others, A61K33/00 (medicinal preparations containing inorganic active ingredients)—33/44 (elemental carbon, *e.g.* charcoal, carbon black), and A61K35/00 (medicinal preparations containing material or reaction products thereof with undetermined constitution)—35/84 (higher fungi), including especially A61K35/78 (materials from plants). Searching with these classification numbers and deleting those not belonging to TCM, one can obtain the number of disclosed filings of patents of TCM from 1985 to the date of searching in China.

As result of a search on April 17, 2002, the number is 15,626, with the latest filing date of October 19, 2001. This means that, since April 1, 1985 (the first day of the coming into force of the patent law in China) to October 19, 2001, about 15,626 applications had been filed.[40] On average, during the 16 years, there had been about 1,000 applications of TCM patents each year in China.

Through analysing some of the concrete examples, this article discloses the following ways by which TCM inventions can be developed, may fulfil the inventiveness criterion of patentability and thus may be granted a patent:

(1) *New techniques for preparation of TCM*: including new physical, chemical or biological technologies. Example: patent 85100957, entitled "Technique of Preparation of Ripe Rhubarb by Heat Pressing", invented by Jiang *et al.* and filed by the Institute of TCM of Chinese Academy of TCM on April 1, 1985, was granted on June 5, 1991. The invention involves a heating process, together with high pressure and supplementary materials, of isolating the active components of ripe rhubarb with a high ratio of reservation.[41]

(2) *Isolation of responsible component(s) of TCM and its products*: including by using absorbing resin, enzyme or chromatography to isolate the responsible part(s).[42] Example: patent 93120161, entitled "Extraction of TCM with Enzyme", invented and filed by Li and Cheng in 1993, was granted on November 8, 2000. The invention involves a process, by using combinations of various enzymes, of extracting responsible components of TCM. Because the enzyme has comparatively specific and

33 See TRIPs, Art.27.1.
34 Patent Law of China (1984, revised 1992, 2000), Art.22, para.1
35 *ibid.* Art.22, para.2
36 *ibid.* Art.22, para.3
37 *ibid.* Art.22, para.4.
38 Patent Law of China, Art.26, para.3. See also TRIPs, Art.29.1

39 The website of the online searching service of SIPO is *www.sipo.gov.cn/sipo/zljsldefault.htm*
40 It should be mentioned that, within these filings, there are many international ones by applicants from foreign countries.
41 See patent 85100957, at *<http://211.152.9.47/sipoasp/zljsl/hyys-yx-new.asp?recid=85100957&leixin=0>*
42 During their long history, the majority of TCMs have remained mixtures of at least two kinds of herbs (or other components) whose elements have been kept unknown. From the perspective of Western medicine, it is more acceptable to have medicine made of what is known and as purely as possible. The TCM industry in China has to adapt itself to this international trend.

high catalytic ability, this process can be used widely in the preparation of TCM.[43]

(3) *New functions of TCM*: with the aid of new technologies or pathological models, new functions or properties of TCM may be found, such as that of anti-cancer or anti-virus (*e.g.* HIV or AIDS). Example: patent 94113919, entitled "A Kind of TCM with Broad-spectrum of Anti-bacteria and Anti-virus and Its Manufacturing", invented by Shao and Wang and filed by the Fudan University in 1994, was granted on January 12, 2000. The invention involves a TCM liquor or ointment effective to specific skin diseases and it is manufactured by adding supplementary materials through multiple steps.[44]

(4) *New prescriptions*: including new prescriptions of TCM, and those as combinations of TCMs and Western medicines, *e.g.* antibiotics or vitamins. Example: patent 94110303, entitled "Compound of Immune-Antibiotics", invented by Liu and filed by the Centre for Research of Biological Immune Technology of Dandong in 1994, was granted on October 27, 1999. The patent involves the combination of one kind of TCM capable of regulating the human immune system and some kinds of antibiotics to form a compound of immune-antibiotics which has remarkably synergic anti-infection property.[45]

(5) *New pathways of administration of TCM*: in addition to its traditional ones, TCM tries to adopt new pathways of administration, *e.g.* by injection or by inhaling. Example: patent 94114040.7, entitled "Injection of Root of Red-rooted Salvia", invented by Fan and Huang and filed by the Shanghai Changzheng Pharmaceutical Factory in 1994, was granted on February 9, 2000. The patent involves a product of red-rooted salvia which can be used clinically as an injection and therefore be convenient for administration.[46]

By these several ways, new knowledge (inventions) of TCM may fulfil the inventiveness criterion of patentability and therefore may be granted a patent. Analogically, other kinds of new traditional knowledge can get patent protection, provided that they meet the patentability requirement of the patent law.

## Concluding Remarks

By raising the concept of "new traditional knowledge", this article has tried to isolate newly developed traditional knowledge from general traditional knowledge already in the public domain. Based on this, the article justifies the proposition that, as one kind of new knowledge, new traditional knowledge should be able to get protection from contemporary IPRs, including patent, copyright, trade mark, trade secret, and geographical indications, provided that it meets conditions each IPR law prescribes. In particular, with the case study of the patents of TCM in China, the article has investigated several ways by which new traditional knowledge can be developed and may satisfy patentability criteria. In conclusion, the article holds that new traditional knowledge should be able to obtain protection from today's IPRs.

43 See patent 93120161, at <*http://211.152.9.47/sipoasp/zljsl hyjs-yx-new.asp?recid=93120161.6&leixin=0*>.

44 See patent 94113919, at <*http://211.152.9.47/sipoasp/zljsl hyjs-yx-new.asp?recid=94113919.0&leixin=0*>.

45 See patent 94110303, at <*http://211.152.9.47/sipoasp/zljsl hyjs-yx-new.asp?recid=94110303.X&leixin=0*>.

46 See patent 94114040.7, at <*http://211.152.9.47/sipoasp/zljsl hyjs-yx-new.asp?recid=94114040.7.X&leixin=0*>.