

TKDL: AN ANSWER TO BIOPIRACY IN INDIA

Pritha Ghosh¹, Satadru Palbag²

¹Undergraduate scholar, ²Assistant Professor
BIPS, SPLPIM Campus, Kalyani, Nadia, West Bengal, India

Email: pritha.ghosh92@live.com

ABSTRACT

TKDL (Traditional Knowledge Digital Library) is the intellectual weaponry system of India to fight against the evils of Bio-piracy. The main objective of TKDL is to maintain the authenticity, simplicity, genuineness, originality, ethnicity and honesty of Indian systems of medicine. TKDL is a collaborative project of Council of Scientific & Industrial Research (CSIR) and Ministry of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy (AYUSH), to safeguard the interests of ethno-pharmacology and rich medicinal cultural heritage of India. This review critically discusses several aspects of TKDL, and its implication in curbing bio-piracy.

Keywords: TKDL, Bio-piracy, Ayurveda

INTRODUCTION

According to WHO, about 80% of world population depends upon traditional systems of medicine¹ India has a rich heritage of traditional system of medicines. Ayurveda is the epitome of ancient system of medicines, rooted in India. This system of medicine had a birth as a distinct part of Atharva Veda². The word Ayurveda has a Sanskrit origin and is composed of two different words which are “Ayur” and “Veda”, as a whole represents ‘Science of Life’. Ayurveda practically confirms and fulfils the literal meaning of the word itself. During time, like any other things in this world, Ayurveda has gone through many systematic developments. It is

still being prominent in this era, unalloyed. Earlier developments did a lot for the advancements of Ayurveda but are certainly not a debatable matter here.

The word Biopiracy describes a situation where indigenous knowledge of nature, originating with indigenous people, is used by others for profit, without proper permission from and with little or absolutely no compensation or recognition to the indigenous people themselves⁷. In other words, it can be said that the ill-practice of commercially exploiting naturally occurring biochemical or genetic material, especially when patent is granted that restricts the further

use of that material, while failing to pay fair compensation to that material's indigenous community.

This holistic medical science got disturbed for the first time during 90s: initiation was caused by the Turmeric Biopiracy Incident⁴. What actually bothered the presence of authenticity of Ayurveda is the exploitation of the tradition and purity of this ancient system of medicines by obtaining patents which finally result in the restriction of the accessibility of Ayurveda. Definitely the Turmeric Incident in the year 1995 marked a scandalous milestone in the history of Traditional Knowledge but it was not an only incident to remember. Neem, Basmati rice cases etc. were also an act of disgrace of Ayurveda.

When the indigenous knowledge is patented for profit, India became the first country to raise her voice against such oppressive treatment. TKDL (Traditional Knowledge Digital Library) was one of the results of India's protest against Biopiracy. To maintain the authenticity, simplicity, genuineness, originality, ethnicity and honesty of Ayurveda was the main motive behind the establishment of TKDL (2001). TKDL is a collaborative project of Council of Scientific & Industrial Research (CSIR) and Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy (AYUSH)⁵. So far, 87 Plants have been categorized to "Protected Medicinal Plants"⁶ to give them optimum security.

TKDL and Ayurveda

TKDL has not only saved Ayurveda but also helped many other fields like Agriculture etc. from getting victimized. Many Developed countries and some developing countries are using Ayurveda for their daily needs, starting from their diet to the medications. That signifies the globalization of Ayurveda which once was confined to India only. Promoting Ayurveda glob-

ally or domestically is definitely a necessary thing for every single person in this field but, at the same time, making a shield against any sort of misuse has to be made. After all, this is our traditional system of medicine, we are the major worshipers. India had been invaded and ruled by more than one foreign dynasties as well as countries. These countries headed India for their own benefits. There was hardly any positive feedback from Indians about the rulers. They had exploited India in every aspect they could, including the oldest medical science of India, Ayurveda. Since then, unrestricted exploitation of Ayurveda has already issued a huge loss in Indian Economy and it will soon result devaluation of the qualification of Ayurvedic Doctors, Pharmacists etc. if not tackled now³. Ayurvedic texts, theories, advices etc. have suffered unhealthy usage by the entire world. Somehow, our devotion for Ayurveda lacked when it becomes a question of safeguarding Ayurveda from exploiters.

Being an easily accessible treasure, Traditional Knowledge has always been a desire for exploiters. These people have developed an idea in their mind that the Traditional Knowledge is not a property of an individual person, but a property of all. So, if they exploit it in any ground, there will be practically nobody for claiming for the mass. But in reality, the scenario differs from the imaginative ideas of the exploiters. In case of 1994 Neem Biopiracy Case⁸, a group of International NGOs and Representatives of Indian Farmers came together to file legal cases against EPO (European Patent Office).

The exact year of beginning of Biopiracy is unclear but India has faced tremendous exploitation of her Traditional Knowledge after 1990. Biopiracy have exploited the Ayurvedic plants, herbs that are frequently used in Ayurvedic

treatment, it can be summarized by the Table below-

Table 1: Biopiracy cases, related to Indian Traditional Knowledge.

Subject	Scientific Name	Year of Granting Patent	Patent Holder(s)	Patent Office	Revocation	Opposition
Haridra, Turmeric ^{4,9} (wound healing property)	<i>Curcuma longa</i> Linn.	1995	Two expatriate Indians at the University of Mississippi Medical Centre namely Suman Kumar Das and Hari Har P. Cohly	US PTO (no. 5, 401,54)	1997	CSIR
Neem ^{8,9} (Controlling fungi on plants by neem extracts)	<i>Azadirachta indica</i> A. Juss.	1994	US Corporation W.R. Grace Company US Department of Agriculture	EPO	2006	A group of International NGOs and representative of Indian Farmers
Godhuma, Indian wheat ^{9,12} (claims to have invented wheat plants derived from a traditional Indian variety)	<i>Triticum aestivum</i>	2000	Monsanto	EPO	2005	Opposed by GREENPEACE and others
Basmati Rice ^{10,11} (crossing a strain of Indian Basmati with an American variety)	<i>Oryza sativa</i> Linn	1997	Rice Tec. Inc.	US PTO (5663484)	Case filed in 2000	India and Pakistan jointly tackled the case

Biopiracy outside India

Apart from the above three cases, many other Biopiracy related cases were noticed at the same period of time, outside India. This are-

1. The hair fall reducing activity of Kava¹³ (*Piper methysticum* Forster) had been patented to the French Company L'Oreal though it is an important cash crop of Pacific. The origin of Kava is in Pacific, especially in Fiji and Vanuatu.
2. In the year 1986, Loren Miller, a native American had obtained a patent on the medicinal value of Ayahuasca^{14, 15} (*Baniste-*

riopsis caapi Mort.) from US PTO. But the medicinal value of this plant was previously known by some tribes residing at Amazon basin. Finally, a protest was raised against the patent (no. 5,751) by COICA (Coordinating Body of Indigenous Organisations of the Amazon Basin) along with others which resulted the patent to be disposed of in 1999.

3. A traditional variety of Quinoa¹⁶ (*Chenopodium quinoa* Willd.), Apelawa, was patented to two professors from Colorado State University by US PTO (5,304,718). Later it

was proved to be a completely unethical invention.

4. Another controversy took place regarding Hoodia¹⁵ (*Hoodia gordonii*). In 1995, CSIR of South Africa claimed a patent on the appetite suppressing activity of Hoodia (P57) to cure obesity. 2 years later they had licensed it to Phytopharm (a British Biotech Company). From then, in 1998, Pfizer acquired the rights to develop and market P57 as a potential drug for treating obesity. All these events were entirely unknown to the Kung Bushmen, San who resides at Kahahari desert of South Africa for ages. They were already aware of the slimming ability and appetite suppressing activity of Hoodia for thousand years. When they had come to know about all these Biopiracy events regarding Hoodia, they spoke against the patent. After a series of drama took place, in 2002 the case was resolved by granting a share of any future royalties from CSIR to San people. It did not affect Phytopharm or Pfizer much but affected CSIR strongly as CSIR was the only patent holder out of all.
5. A New Jersey based company, Pure World Botanicals granted an US patent for the extract of Peruvian Maca root (*Lepidium meyenii Walpers*¹⁷, *Lepidium peruvianum Chacon*). Peruvian Government tried to revoke the patent on behalf of its indigenous population¹⁷.
6. Soybeans are indigenous to China and one of the important crops of entire Asia continent. A tricky patent (WO 2000018963) was granted on soybeans to the transitional agrochemical corporation, Monsanto, gave Monsanto superiority over all the varieties of soybeans. Greenpeace has legally started the case against Monsanto.¹⁸

There are a lot more incidents that can be included in the above list. Some are yet to be filed; some have already won over Biopiracy. Estimation of the threats of Biopiracy should be a field of expertise.

TKDL and its Features

TKDL stands for Traditional Knowledge Digital Library. It is a tool for the patentors to examine the submitted patent requests on the grounds of Biopiracy and unethical patents. It is definitely a unique idea itself to defence against the exploitations of India's Traditional Knowledge. TKDL preserves the Intellectual Properties of TK holders, irrespective of anything. The incidents related to Turmeric, Basmati rice and Neem practically interfered with a huge population directly depended on these items. Local communities, Tribes and even an entire country got benefitted by the initiation and functioning of TKDL.

According to TKDL database, it is a pioneer initiative of India to prevent misappropriation of a country's traditional medicinal knowledge at International Patent Offices on which healthcare needs of more than 70% population and livelihood of millions of Indian people is solely dependent.¹⁸

TKDL is completely an Indian initiative taken by CSIR (Council of Scientific and Industrial Researches) and the Ministry of AYUSH³ (Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homeopathy) in the year 2001 when the word was suffering from Biopiracy issues and unethical patent complications. The task of making TKDL was not at all simple. It took intense hardship to establish the database. Information Technology (IT) had a great influence in making of TKDL.¹⁹

Some important features of TKDL are-

1. It had been set up by an experienced task-force that included IT experts, experts in the field of Ayurveda, Unani, Yoga, Siddha and Homeopathy, Patent Examiners, Technical officers, Language experts etc.¹⁹
 2. It has estimated around 2000 unethical patents have been granted all over the world which are directly or indirectly related to Indian Medicinal System.¹⁹
 3. TKDL is based on 359 books of Indian System of Medicine that actually costs around US\$ 1000. All the information written in these books are accessible by the Patent Officers.¹⁹
 4. It is a bridge between Patent Officers and Traditional Knowledge. It can also be defined as a nightmare of unethical patent holders.
 5. Presently, TKDL accessibility is restricted to 9 IPOs (International Patent Office) only. These are- European Patent Office (EPO), United State Patent & Trademark Office, Japan Patent Office, United Kingdom Patent Office, Canadian Intellectual Property Office, German Patent Office, Intellectual Property Australia, Indian Patent Office and Chile Patent Office.¹⁹
 6. TKDL can be accessed in 5 different languages. These are- Spanish, German, English, French and Japanese. This initiative has been taken to remove the unreachability of the India's Traditional Medicinal Knowledge because, most of the texts were written in local languages like Sanskrit, Hindi, Tamil, Urdu etc.¹⁹
 7. The TKDL database contains 1200 formulations selected from numerous texts of Ayurveda (500), Unani (500) and Siddha (200) system of medicine.¹⁹
 8. All the formulation listed in TKDL database consists around 291 plants as ingredients or raw materials of animal or mineral origin.²⁰
 9. A distinct random search option is also available at the homepage to search about variety of things by 4 different searching options. These are Simple Search, Advance Search, TKRC Search, IPC (International Patent Classification) Search.²⁰
 10. The 'search' option of TKDL is unique in nature. It provides two types of searches by clicking on the images of 'Ayurveda', 'Unani' and 'Siddha' at the homepage. Even for assistance in searching keywords, 'Tip for Searching' is also there in the search page.²⁰
 11. TKDL search features include complex Boolean Expressions, field search, phase search etc.²⁰
 12. The TKDL listed formulations are used by medical practitioners for the treatment of 186 diseases.²¹
 13. The entire database is searchable and can be searched by any Patent Officers, anytime at absolutely no cost. Access of TKDL to Patent Officers is under TKDL Access Agreement which do not permit disclosure of the content to any third party.²¹
 14. Original Slokas are mentioned in TKDL that are readable and are convertible to other languages for the purpose of pre-grant.²²
 15. The software also covers traditional terminologies into moderns.²²
- With the help of the evidences, collected from the TKDL database, pre-grant opposition are done at many IPOs. TKDL has already won over 36 MNCs from 15 countries²³. The biggest achievement of TKDL is to set aside/ withdrawn/ amend around 200 patents granted to many companies, individuals from China,

United States, Spain, Italy etc²⁴. It is also expected to get the similar outcome in about 1200 more cases that have already been filed, based

on TKDL database. So far only India has taken such initiative for protecting her Traditional Knowledge.

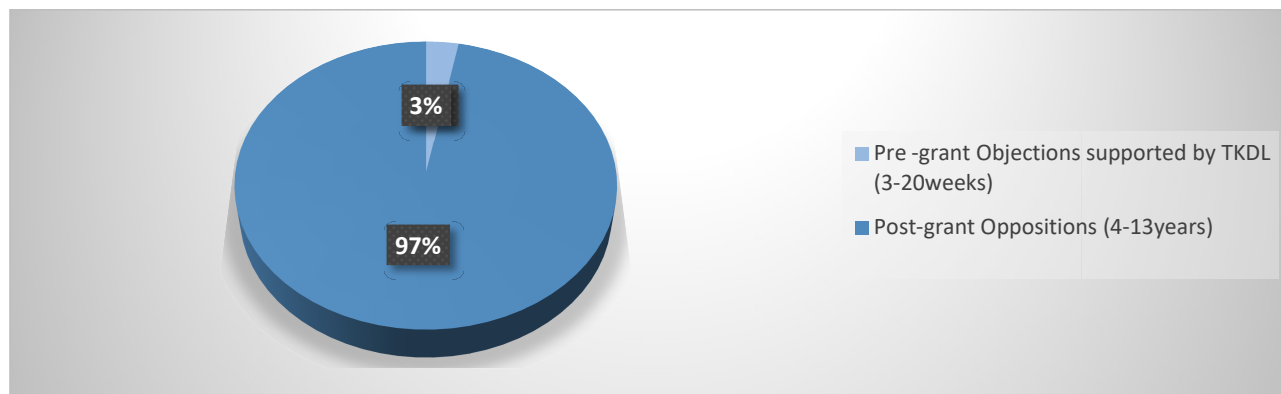


Image 1: Maximum time taken for opposing patents²⁵

TKDL in Future

Below there are some more possible effective ways to energize the shield against Biopiracy in future.

- TKDL should be included in studies as a basic study material for the students dealing Traditional Knowledge and for the budding researchers. This will allow them to know the fact that Biopiracy is danger for our Traditional Knowledge.
- Awareness campaigns can be performed with the help of Mass Media to let people know what Biopiracy is and how to tackle it by TKDL.
- TKDL database is available in few languages and few IPOs have the authority to access TKDL. The language barrier should be removed from the base. And further negotiations must be concluded to other countries for accessing TKDL.
- The major milestones of TKDL since its establishment should be shared to the world. By doing this, TKDL can become an inspiration for raising voice against Biopiracy.

- ‘Protected medicinal plants’⁶ list in TKDL database needs more update.
- The post-grant cases can be dealt with the help of TKDL along with active NGOs all over the world. Opposition parties can seek the help of NGOs to win over the cases that are already going on related to Traditional Knowledge.
- A list or a directory should be made consisting of all the Plants, Minerals and other natural raw materials that are used in Ayurvedic preparation according to the ancient texts, though many crude drugs are now extinct. The directory should have proper references mentioned against each name.

CONCLUSION

Ayurvedic medicines are made of natural sources. All these fall in the category of Traditional Knowledge. Crude drugs like Neem, Basmati, and Turmeric have been used by Ayurvedic doctors from ages to heal wounds and to treat various diseases. Similarly, there are thousands of other plant products, animal products

from land sources or even from marine sources being regularly used for preparing Ayurvedic medicines. A major part of the population of India is directly depended on these medicines. So, a shield has to be activated to all these crude drugs as soon as possible. Many measures have already been taken by TDKL and the Ministry of AYUSH.

Thus we see that TKDL is the finest of its kind that will preserve the ethnic and traditional drugs and other food substances of Indian origin. But awareness should reach the grass root level of academics like in undergraduate and postgraduate level. Intellectual theft or rather bio piracy is a bread of intellectual world. If from graduate level we are strict to make research work more authentic and plagiarism free, it is the first step towards building a bio-piracy free research field.

REFERENCES

1. Narayanaswamy, V. "Origin and Development of Ayurveda: (A Brief History)." *Ancient science of life* 1.1 (1981): 1.
2. Pulok K Mukherjee, Quality control of herbal drugs. New delhi, business horizon publishers,2005, p.2
3. Suvarna Pandey, Patent Attorney,"Biopiracy related to Traditional Knowledge & Patenting issues", S. Majumdar & Co. New Delhi.
4. Turmeric Biopiracy. Available from: <http://www.tkdل.res.in/tkdل/langdefault/commoн/BioPiracy.asp?GL=Eng#Tur>
5. TKDL.res.in [homepage on the Internet] Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in>
6. Protected Medicinal Plants. Alphabetical order. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Commoн/ProtectedPlants.asp>
7. Ayurveda under threat from western exploitation: Expert [cited 2003 Jan 8]. Available from: <http://www.rediff.com/money/2003/jan/08ayurveda.htm>
8. Neem Biopiracy. Available from: <http://www.tkdل.res.in/tkdل/langdefault/commoн/BioPiracy.asp?GL=Eng#Neem>
9. Divya Bhargava, Patent Act: Biopiracy of Traditional India Products- An overview. Available from: www.countercurrent.org
10. Basmati Rice Biopiracy. Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in/tkdل/langdefault/commoн/BioPiracy.asp?GL=Eng#Rice>
11. TED case Studies. Basmati. Case number: 493. Case Mnemonic: Basmati. Case Name: India-US Basmati Rice Dispute. Agricultural and Processed Food Product Export Development Authority. Available from: <http://www1.american.edu/TED/basmati.htm>
12. Patent Publication EP0445929 B1. [updated 2008 Jan 2]. Available from: <https://www.google.com/patents/EP0445929B1?cl=un>
13. Bio-piracy of Traditional Knowledge. Introduction. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Commoн/Biopiracy.asp?GL=Eng>
14. Ayahuasca Biopiracy. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Commoн/BioPiracy.asp?GL=Eng#Aya>
15. Biopiracy in the Amazon. Case Studies of Biopiracy. Available from: <https://sites.duke.edu/amazonbiopiracy/case-studies-of-biopiracy-3/>
16. Quinoa Biopiracy. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Commoн/BioPiracy.asp?GL=Eng#Qui>

17. Meissner, Henry O., et al. "Peruvian Maca: Two Scientific Names *Lepidium Meyenii* Walpers and *Lepidium Peruvianum* Chacon—Are They Phytochemically-Synonymous?" *International journal of bio-medical science: IJBS* 11.1 (2015): 1.
18. No patents on seed.org [homepage on the Internet]. Patent cases. The wheat case (Monsanto) - EP 445929 B2 - Soft milling wheat and biscuits. Available from: <http://www.alt.no-patents-on-seeds.org>
19. About TKDL. Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Common/Abouttkdl.asp?GL=Eng>
20. About the Database. Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Common/More.asp?GL=Eng7>
21. Condition of Use. TKDL. Available from: http://www.tkdل.res.in/tkdل/langdefault/Common/Terms_Use.asp?GL=Eng
22. Preeti P. Lecturer. Traditional Knowledge Digital Library. [about 18p.] Available from: <http://www.clib.dauniv.ac.in/E-Lecture/TKDL.pdf>
23. TKDL Success against MNC. Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Common/Mnc.asp>
24. TKDL Outcomes against bio-piracy. Traditional Knowledge Digital Library. Available from: <http://www.tkdل.res.in/tkdل/langdefault/Common/OutcomeMain.asp?GL=Eng>
25. Protecting India's Traditional Knowledge. World Intellectual Property Organization. Available from: http://www.wipo.int/wipo_magazine/en/2011/03/article_0002.html.

Source of Support: Nil

Conflict Of Interest: None Declared

How to cite this URL: Pritha Ghosh & Satadru Palbag TKDL: An Answer To Biopiracy In India. *International Ayurvedic Medical Journal* {online} 2017 {cited November, 2017} Available from: http://www.iamj.in/posts/images/upload/4180_4187.pdf