International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume: 04, Issue: 06 "June 2019"

ROLE OF MEDIA IN AWARENESS OF 'BIO-PIRACY OF TRADITIONAL KNOWLEDGE'

Dr. Juhi P. Pathak

Asst. Professor, GD Goenka University, Gurgaon, Haryana, India

Former Junior Research Fellow (UGC) Department of Communication and Journalism, Gauhati University, Assam, India

ABSTRACT

Through this research paper, the researcher wishes to highlight the role of media in creating an awareness of the ill effects of bio-piracy on our country and how Media can help in making the citizens alert of the situation. We need to have alert and cautious citizens to keep an eye on the actions of these developed nations who are reaping the benefits of our age-old traditional knowledge and taking advantage of our ignorance on the matter. Spreading awareness on the issue can help us in making our citizens alert and aware of their social customs and traditional knowledge and it can go a long way in curbing Bio-piracy in India. But as the saying goes, 'A hen never knows how valuable her egg is until someone snatches it away.' The good thing about Bio-piracy is that, because of it, today we are making an effort to go back to our roots, which we had long back left behind or almost forgotten, in our craze for development and progress.

Keywords: Environment, Bio-piracy, Bio-diversity, Media, Traditional knowledge, Social Customs

INTRODUCTION

Traditional knowledge has always been an easily accessible treasure and thus has been susceptible to misappropriation.

Traditional knowledge (TK), indigenous knowledge (IK), traditional ecological knowledge (TEK) and local knowledge generally refer to knowledge systems embedded in the cultural traditions of regional, indigenous, or local communities.[i] Traditional knowledge includes types of knowledge about traditional technologies of subsistence (e.g. tools and techniques for hunting or agriculture), mid-wifery, ethno-botany and ecological knowledge, celestial navigation, ethno-astronomy, etc. These kinds of knowledge are crucial for the subsistence and survival and are generally based on accumulations of empirical observation and interaction with the environment.

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Traditional knowledge has mostly been orally passed for generations through stories, legends, folklore, rituals, songs, and even laws.[ii]

The conventional learning, especially, identified with the treatment of different infections has given prompts to advancement of 'biologically active molecules' by the innovation of the rich nations. At the end of the day, conventional learning is being misused for 'bio-prospecting'. Likewise Traditional learning is frequently abused, on the grounds that it is advantageously accepted that since it is in open area, communities have surrendered their rights over it. Conventional Knowledge incorporates both the codified (recorded) just as non-codified data (not reported but rather might be orally transmitted). But, with the increasing pace of development in all spheres of life which also includes scientific and technological development, most of us have forgotten that we have left our traditional values far behind.

Someone in some remote village might know the names and use of medicinal plants that are found in the area he resides but most of us living in the urban areas or as rightly said, 'concrete jungle,' we do not get to see a 'Neem' tree let alone reaping the benefits from it. Our Vedic philosophy says that every household should have a 'Tulsi' tree where earthen lamps should be lighted every morning and evening but such traditions are becoming impossible to follow in this fast-track lifestyle that we live.

The result is that we and the coming generations are deprived of the knowledge and good effects of our traditional knowledge.

OBJECTIVES

1. To give a detailed analysis on the concept of bio-piracy.
2. To critically evaluate the disadvantages and negative impact of bio-piracy on our traditional knowledge.
3. To compile comprehensive case studies of occasions when bio-piracy of traditional knowledge have occurred.
4. To highlight the role of media in creating awareness of 'Bio-piracy of traditional knowledge.'

RESEARCH QUESTION

If media can be used as a tool in our country to make the masses aware and sensitive to the issue of bio-piracy of our traditional knowledge?

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RESEARCH METHODOLOGY

The research has been conducted through a series of **Case Studies** on the issue of Bio-piracy. The cases have taken from both national and international scenario. The research is an **exploratory** one as not much data is available on the issue as the concept itself is very new. The research is **diagnostic** as we have gone into an **indepth analysis** of the causes and effects on bio-piracy. Apart from the above, the paper is also **prescriptive** and **suggestive** as the researcher suggests how media can play a role in creating awareness among the people on the issue of bio-piracy of our traditional knowledge.

HISTORY

Earlier, the legalities of getting samples of plants, microorganisms, and animals were very simple. In numerous examples, a scientist could just touch base at a field site and gather samples. There was no pertinent law. The researcher may get casual authorization from a neighbourhood community or landholder, as much for being on the land with respect to gathering. Probably, the scientist may be required to get permission to gather from national grounds, similar to a fishing or hunting license.[iii]

"Take-and-run" describes the old approach to collecting, lately dubbed "biopiracy."

- The recorded history of collecting plants goes back at least around 3500 years when Egyptian rulers began bringing plant species to their home countries after military endeavours.
- The British Empire also advocated regular plant collections. During the Voyage of the Beagle, Charles Darwin simply took what intrigued him and brought it home.
- The Royal Botanical Gardens took rubber trees from Brazil, and planted them in Southeast Asia. They took cinchona seeds from Bolivia and planted them in India in violation of their national law.
- Commodore Perry's naval mission to Japan collected a wide variety of plants to bring back to the United States.
- Another legend among ethno-botanists is the adventures of Richard Schultes during the mid-twentieth century. He was able to befriend local shamans, who allowed him to collect thousands of specimens of medicinal plants, hundreds of which had never previously been identified taxonomically.[iv]

None of these famous collecting trips was challenged on legal grounds.

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BIO-PIRACY

Bio-piracy alludes to the utilization of intellectual property works to legitimize the exclusive possession and control over natural resources and biological products and procedures that have been used over hundreds of years in non-industrialized countries. Patent claims over bio-diversity and indigenous knowledge that are based on the advancement, innovativeness and genius of the people of the 'Third World' are demonstrations of 'bio-piracy'.

Since a patent is given for invention, a bio-piracy patent denies the innovation in indigenous knowledge.

The hurry to grant patents and reward invention has driven corporations and governments in the industrialized world to ignore and overlook the centuries of collective, cumulative innovation of generations of rural communities.

Bio-piracy, according to Vandana Shiva, occurs because of the inadequacy of western patent systems and their inherent bias against other cultures. Western culture has also suffered from the 'Columbian blunder' of the right to plunder by treating other people, their rights and their knowledge as non-existent. *Terra Nullius* has its contemporary equivalent to *Bio-Nullius*- treating traditional knowledge as empty and hence claim to 'ownership' through the claim to 'invention'.[v]

Demand for 'Revocation of Patents' for Traditional Knowledge

The grant of Intellectual Property Rights on non-patentable knowledge (related to traditional cures), which is either based on the existing traditional knowledge of the developing world has been causing a great concern and these countries have also applied for the revocation of these patents but given the cost and time involved, 'revocation of patents' does not seem to be a feasible option. Instead, it is better to make everyone aware of the consequences of bio-piracy.

Protection of Traditional Knowledge

In the International Patent Granting offices, the examiners use available resources and literature to access the claims for patent of original findings. Patent literature, is usually wholly contained in several distinctive databases and can be more easily searched and retrieved whereas non-patent literature prior art is often buried somewhere in the many and diverse sources. India has an ancient history of the use of traditional medicines but the sources of such knowledge has been very diverse. Therefore, a need was felt to create an exhaustive database on traditional knowledge of India.

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Some examples of bio-piracy of Indian traditional knowledge:

Turmeric

The rhizomes of turmeric are used as a spice to give a yellowish colour in Indian cooking. It also has properties that make it an effective ingredient for various medicinal treatments. Turmeric helps guard against gastric disorders. It's a natural antiseptic, antibacterial agent and blood cleanser, useful in disinfecting cuts, burns, wounds, and other skin infections. Taking turmeric is a natural way to detox the liver. Curcumin has been found to help increase the flow of bile, which is an important component in the breakdown of dietary fat. For diabetics, turmeric may be taken to help regulate blood sugar. Due to its anti-inflammatory properties and pain relieving properties, curcumin is used for arthritic pain.[vi]

Suman K. Das and Hari Har P. Kohli in 1995 (two expatriate Indians at the University of Mississippi Medical Centre) were granted a US patent (no.5, 401,504) on use of turmeric in healing wounds. The Council of Scientific & Industrial Research (CSIR), India, New Delhi filed a re-examination case with the US PTO challenging the patent on the grounds that the knowledge has always been existing in India. CSIR argued that the medicinal properties of turmeric has been extracted for healing wounds and rashes since thousands of years and therefore its medicinal use was not a novel invention. Their claim was supported by documentary evidence of traditional knowledge, including ancient Sanskrit text and a paper published in 1953 in the Journal of the Indian Medical Association. Despite an appeal by the patent holders, the US PTO upheld the CSIR objections and cancelled the patent. The turmeric case was a landmark judgment case as it was for the first time that a patent based on the traditional knowledge of a developing country was successfully challenged. The patent was revoked by The US Patent Office in 1997, after ascertaining that there was no novelty as the findings by innovators having been known in India for centuries.[vii]

Neem

The word 'neem' is derived from Sanskrit Nimba which means 'bestower of good health'. The ancient texts Vedas called Neem, 'Sarva Rog Nivarani', which means 'one that cures all ailments and ills'. The Neem extracts have a powerful antiseptic, anti-fungal, antiviral and anti-bacterial effect. Traditionally, dried leaves of neem also aid in protecting stored grains and pulses from mites through the year. Neem oil was believed to prevent baldness and greying of hair and was used as anti-lice and anti-dandruff treatment.[viii]

In 1994, European Patent Office (EPO) granted a patent (EPO patent No.436257) to the US Corporation W.R. Grace Company and US Department of Agriculture for a method for controlling fungi on plants by the aid of hydrophobic extracted Neem oil. A group of

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international NGOs and representatives of Indian farmers filed legal appeal against the patent in 1995. Leading the campaign in the neem case was the EU Parliament's Green Party, India-based Research Foundation for Science, Technology and Ecology (RFSTE) and the International Federation of Organic Agriculture Movements (IFOAM).[ix] They provided evidence that the anti-fungal properties of extracts of Neem seeds had been known and used for hundreds of years in Indian agriculture to protect crops, and therefore, did not hold any ground for patent. But the Indian government successfully argued that the medicinal neem tree is part of traditional Indian knowledge.

"Denying the patent means upholding the value of 'traditional' for millions of [people] not only in India but throughout the South. The free tree will stay free," said RFSTE director, Dr Vandana Shiva. The backbone of RFSTE's challenge was that the fungicide qualities of the neem tree and its use had been known in India for over 2,000 years. The neem derivatives have also been used traditionally to make insect repellents, soaps, cosmetics, tooth cleaners and contraceptives.[ix]

Under normal circumstances, a patent application should always be rejected if there is prior existing knowledge about the product. But in the United States, "prior existing knowledge" is only recognised if it is published in a journal - not if it has been passed down through generations of oral and folk traditions.[ix]

In 1999, the EPO determined that according to the evidence all features of the present claim were disclosed to the public prior to the patent application and the patent was not considered to involve an inventive step. The patent was revoked by the EPO in May 2000.

Basmati Rice

Basmati rice, sought-after for its fragrant taste, was developed by Indian farmers over hundreds of years.[x]

In late 1997, an American company RiceTec Inc, was granted a patent by the US patent office to call the aromatic rice grown outside India ‘Basmati’.[xi] The US Patent No. 5663484 was dated 2nd September, 1997. This patent application No. 272353 was filed on July 8, 1994.[xii]

RiceTec has been selling Basmati rice grown in the US under the trademark Texmati and Kasmati for almost two decades. Texmati carries the description "American-style Basmati rice", while the superior Kasmati is described as "Indian-style Basmati rice".[xiii]

The Patent has been challenged by the Agricultural and Processed Foods Exports Development Authority (APEDA) at the USPTO on behalf of Government of India. The use of the term “Basmati” by Rice Tec has also been challenged on the grounds of inappropriate Trademark

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usage and violation of “geographical indication”. Basmati rice has been grown for centuries in the Greater Punjab Region (India and Pakistan). In September 2000 Rice Tec withdrew four of its claims related uniqueness of its rice in the US Patent.[xiv]

Karela, Jamun and Brinjal

Cromak Research Inc, a New Jersey-based company, has been granted patents for derivatives of karela (bitter gourd), jamun (syzygium cumini) and brinjal. The company is owned by non-resident Indians. Patent number 5900240 was given for anti-diabetic properties of lowering blood sugar levels, despite their use being mentioned in several ancient Indian texts.[xv]

Melons as a natural resistance to plant virus

The European Patent Office (EPO) has revoked a patent held by Monsanto on melons (EP1962578) for technical reasons. Monsanto was claiming melons with a natural resistance to plant viruses as its own invention, derived from breeding without genetic engineering. The resistance was detected in Indian melons. The patent was granted by the European Patent Office (EPO) even though European patent law does not allow patents on plant varieties and processes for conventional breeding. The Indian government supported the opposition from ‘No Patents on Seeds’ by a sending letter requesting the patent to be revoked. Essentially the application of the patent constituted an act of biopiracy - violating Indian law and international treaties.[xvi]

Melons as a cure for Vertiligo

The European Patent Office (EPO) has cancelled its earlier "intent to grant patent" order to a Spanish company on the use of melon extract to cure vitiligo (leucoderma) -- a disease that causes skin de-pigmentation to almost 65 million people globally. Interestingly, under India's ancient Unani system of medicine, hakeems have for hundreds of years been using melon extract to cure this disease. Michael Jackson was probably the world's most famous vitiligo patient. After studying India's documents available in the TKDL which confirmed "evidence of prior art", the EPO has decided against granting patent for the anti-vitiligo cream to the Spanish company Perdix group SL. The TKDL, which has documented and translated knowledge of traditional Indian medicines from Hindi, Sanskrit, Arabic, Persian, Urdu and Tamil to five international languages -- English, Japanese, French, German and Spanish -- will greatly help in fighting foreign companies and countries from claiming patents over information and practices already available in India. In order to confirm EPO's order, TOI scanned through its website and found that application number EP1747786 titled, "Natural product in cream with anti-vitiligo (leucoderma) therapeutic properties", was filed by Perdix Euro group SL, Spain, in July 2006. The patent was for a cream that uses vegetal ingredients such as melon, bay rum and lemon, which when employed on the white patches resulted in regeneration of melanocytes. EPO

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decided to grant the Spanish company patent for its cream on June 4, 2009. On July 8, 2009, India provided evidence to EPO -- books like Quarabadeen Najmul Ghani, Khazain-al-Adviyah and Muheet-eAzam by Indian hakeems Mohammad Najmul Ghani Khan and Mohammad Azam Khan -- that extensively talked about melon's anti-vitiligo properties and how it has been used here for over 1,200 years. On July 27, EPO cancelled its intention to grant patent to the Spanish company.[xvii]

Ashwagandha

Ashwagandha plant has been used for centuries in Ayurveda, Siddha and Unani medicine to treat various conditions including stress, heart problems, diabetes and depression.

On March 25, 2010, the European Patent Office dismissed an application from the US-based Natreon on the medicinal properties of the plant Withania somnifera.[xviii] That's the Latin name for Ashwagandha. Natreon had submitted the application in 2006 claiming that it had developed a "novel method" to treat or manage a number of stress-related conditions. The patent application for Ashwagandha may have failed in Europe but the United States Patent Office has already granted Natreon a patent on a number of Withania-based products, including Sensoril, an extract of Withania somnifera, for stress-related disorders. On its website, Natreon advertises that it uses Ayurvedic medicine to offer 'unique, patented ingredients created after exhaustive research, trial and development'. It claims to have 'a broad portfolio of products and technologies, with compelling, intellectual property, that can serve unmet nutritional supplement, functional food, and pharmaceutical market needs.'[xix]

Brahmi

The extracts of Brahmi have been traditionally used in India to cure neurological disorders such as epilepsy, hysteria, and mental retardation. It acts as nervine tonic and as an anti-stuttering agent. It is used as a potential memory enhancer. Scientific validation of these drugs is also on the track. US Patent publication No. 20030157201 published on August 21, 2003, reveals a composition made from the extracts of Brahmi herb has proven potential for improving overall mental performance in children, adults and mentally deficient people. This patent document reveals/claims the extract of the herbs in composition, which are being traditionally used in India since years and recently validated; there is no novelty in technical effect or inventive step and the industrial application is also already known; consequently it has be opposed.[xx]

Shell of Mollusk

The shell of anyone of the mollusk species like Kilinjal (oyster), Sangu (conch), or Palagarai (porcelaneous) is pounded, mixed with lemon juice, finished into paste form and used as a

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tropical preparation for skin lesions, acne, dermatitis and ulcers. A US patent numbered US 4393045 claimed a curative, cosmetic composition formed by intimately admixing the extrudate of a citric acid-containing fruit with the inner lining of a mollusk shell, said to be a composition having healing properties on a variety of skin afflictions when applied topically to humans. The claim includes the usage of mollusk shell from the group consisting of oyster, clam and abilone. The revealed composition was publicly known and used in India before the priority date of the claim. [xxi]

Shilajit

Asphaltum or shilajit is a wonder drug of indigenous system of medicine having wide range of therapeutic applications. Shilajit is a natural substance found mainly in the Himalayas, formed for centuries by the gradual decomposition of certain plants by the action of microorganisms. It is a potent and very safe dietary supplement, restoring the energetic balance and potentially able to prevent several diseases. Shilajit is an important, known component of the ayurvedic medicine given its properties for health benefits such as an increase in longevity, rejuvenating, and arresting aging roles have been attributed to it.

Botanical ingredients supplier Natreon (New Brunswick, NJ) announced in 2018 that it has received a U.S. patent for a shilajit bioactive for weight management. This U.S. patent (US 9901596) is for 3-hydroxy-dibenzo-α-pyrone (3-OH-DBP), also known as urolithin B. Urolithin B is a natural bioactive present in shilajit, a sticky, tarlike substance that is said to help to regulate weight gain. The company says that international patents for its urolithin B are pending.

In 2014, Natreon received a U.S. patent for a combination for either 3,8-dihydroxy-dibenzo-α-pyrone (3,8-(OH)2-DBP), also known as urolithin A, or 3-OH-DBP (urolithin B) and CoQ10/ubiquinol, "as mitochondria-targeted antioxidants for treatment of mitochondrial disorders" (US 8894993). Both urolithins, the company says, are bioactive components of shilajit and of shilajit's fulvic acids.[xxii]

Ginger, Cumin Seeds (Jeera) and Onion as slimming agents

Claras ApS, a Danish company, on September 19, 2007 filed a patent application at the European Patent Office, saying its invention of turmeric, cumin, ginger and onion as slimming agents was novel. But the Council of Scientific and Industrial Research (CSIR), with the help of India's Traditional Knowledge Digital Library (TKDL), dug out formulations from ancient Ayurveda texts like Astanga Samgraha, Yogaratnakarah, Yogatarangini and Gadanigrahah dating back to the 5th century, which contained formulations involving their use for ages in India, as fat burners. Director of TKDL Dr V K Gupta submitted a letter to EPO on August 25, 2009 to inform the examiners that all the four have long been known in Indian systems of traditional

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medicine for their use as slimming agents or fat destroyers. CSIR's letter to EPO mentioned that the patent application number EP2044850, titled method for altering the metabolism characteristic of food products, may kindly be referred to wherein the usefulness of a herbal composition of Zingiber officinale (ginger), Allium cepa (onion) , Cuminum cyminum (cumin seed) and Curcuma longa (turmeric) on being added to a food product as a slimming agent by altering the digestion characteristic/metabolism characteristic of the food product has been claimed to be novel. The letter also added that in TKDL, there are several references where all four have been found to be used for improving digestion process and act as slimming agent. Hence, there does not seem to be any novelty or inventive step involved in the claims made in the above referred patent application. The letter was accompanied with evidence from age-old Indian medicinal texts.[xxiii]

Following India's intervention, the Danish company was not left with any option except to withdraw its patent and claims.

Ginger

India has foiled an attempt by a British pharmaceutical company to claim a patent on using ginger for the treatment of cold. While Indians have been gulping down 'adrak chai' for generations as a home remedy, Nicholas John Larkins, London, filed a patent application (GB2436063) titled "Pharmaceutical composition for the treatment of excess mucous production" on March 16, 2006 at the British patent office. The firm claimed a "unique finding" in the use of ginger (Zingiber officinale) and kutki (Picrorhiza kurroa) for the treatment of cough and lung diseases.[xxiv]

Within two weeks of India providing evidence, the attempt to pirate India's traditional medicinal knowledge was struck down by the UK patent office in 2011.

Milk

India has successfully foiled a bio-piracy bid by a Swiss multi-national firm to patent an age-old Indian home remedy – milk as a laxative. Nestec SA had filed a patent application at the European Patent Office (EPO) on May 12, 2009, claiming the usefulness of cow milk for the treatment of constipation and as a laxative to be its unique finding. Nestec SA had filed a patent application (EP2251029) under the title “Lactoferrin and gut neuronal health in adults and/or elderly”.

However, cow milk is being used alone or in combination with other ingredients for treating constipation and as a laxative in traditional Indian medicine systems for hundreds of years.

The Council for Scientific and Industrial Research (CSIR) and the Union health ministry’s department of Ayush sent the EPO references of the remedy from several ancient Indian texts

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dated between 5th century and 20th century. The books belonging to the Indian systems of medicine that were referred to as evidence by India and sent to EPO included Astanga Hridaya (5th century), Vangasena (12th century), Rasendracintamanaih (16th century), Siddhabhesajamanimala (19th century) and Khazaain-al-Advia (20th century).xxv

This led to the applicant withdrawing its claim and patent application on January 24, 2012.

Jamun

After combating bio-piracy of neem and haldi in the US and Europe, India has now woken up to the problem in its own backyard. In 2012, the government has revoked a patent granted by the Indian Patents Office for a medicine made from the extract of jamun, lavangpatti and chundun meant to treat diabetes. Using a "rarest of rare" provision in the Patents Act, the government decided to quash the protection that drug maker Avesthagen had got earlier this year on the grounds that the patent right was "mischievous to the state and generally prejudicial to the public" as it was an "integral part" of ayurveda, unani and siddha system of medicine. The only other time that the provision was used was to cancel a patent given to a US firm for developing cotton cells by tissue culture. But this time, the patent given to the mix of jamun, lavangpatti and chundun was proving to be a major embarrassment given that India has for long fought for protecting traditional knowledge and genetic resources and sought to check piracy of ayurvedic and other traditional forms of medicines. What is even more curious is how the Indian Patents Office gave the protection after the government had successfully got European authorities to turn down the application two years ago. Cancelling the patent given to Avesthagen was not easy as the company argued that the extracts, which work individually in managing diabetes, had an aggressive effect when combined. In addition, it used an approach that is "innovative, novel and scientific" in developing a formulation and screened it for efficacy and safety using modern technology. Defending the patent, the company told the department of industrial policy and promotion that it developed the formulation from three plants after it had originally identified some 100 plants, which were shortlisted to 10. Arguing that the patent was not prejudicial to public interest, the company said the "invention" was novel and provided scientific validation to Indian traditional knowledge and would support Indian farmers, from whom the plants would be sourced, and provide employment to people. The government, however, countered it by saying that for centuries, it was known that the plants were used for management of diabetes and there were no inventions. "When plants are known to act against a particular disease, extracts would certainly perform the same function," an official said. Besides, the government is of the view that a patent cannot be granted for validating something that is part of traditional knowledge.[xxvi]

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Pudina

India has foiled a major Chinese bio-piracy bid to patent the use of medicinal plants 'pudina' (mint) and 'kalamegha' (andrographis) for the treatment of H5N1 avian influenza or bird flu. The Council of Scientific and Industrial Research (CSIR), with the help of India's Traditional Knowledge Digital Library (TKDL), dug out formulations from ancient Ayurveda and Unani texts, like 'Cakradattah', 'Bhaisajya Ratnavali', 'Kitaab-al-Haawi-fil-Tibb' and 'Qaraabaadeen Azam wa Akmal', dating back to the 9th century, to show that both 'pudina' and 'kalamegha' have been widely used in India since ages for influenza and epidemic fevers. After receiving exhaustive evidence from CSIR that confirmed India's stand, the European Patent Office (EPO) on June 10, 2010 cancelled the decision to grant patent to Livzon, a major Chinese pharmaceutical company, on the medicinal properties of pudina and kalamegha for treating bird flu.

It all began when Livzon, on January 19, 2007 filed a patent application at EPO claiming usefulness of pudina and kalamegha for the treatment of bird flu to be novel. Impressed with the data, EPO decided to grant patent to Livzon on February 25, 2010. However, on April 27, director of TKDL Dr V K Gupta shot off a letter to the EPO informing the examiners that the medicinal properties of pudina and kalamegha have been long known in Indian traditional medicine. The letter said that the patent application number EP1849473, titled Chinese traditional medicine composition for treatment of avian influenza, method for preparation, and application thereof, may kindly be referred to wherein the usefulness of andrographis (kalamegha) and mint (pudina) for treatment of fever, detoxification and for the treatment of avian influenza, has been claimed to be novel. The letter added that in the TKDL, there are several references where andrographis and mint are used for the treatment of influenza and epidemic fever. Hence, there does not seem to be any novelty or inventive step involved in the claims made in the above referred patent application.[xxvii]

Following the letter, the EPO set up a three-member panel to study the evidence. On June 10, 2010 the panel decided to cancel the Chinese patent claim.

Pistachio

The European Patent Office (EPO) had decided to grant a patent to Data Medica Padova SPA, Italy, on February 2009 for use of pista (Pistacia vera) in an anti-cancer drug.. Citing evidence based on eight Unani books published as early as 10th century and one Siddha book published in 1924, an application was filed on July 2009. EPO, based on the evidence, set aside its earlier decision to grant patent in the same month.[xxviii]

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Bhang

A British drug company, GW Pharma Limited, which had filed an application on 19 April 2007 with the European Patent Office (EPO) to patent bhang for its properties to treat cough and bronchitis, has withdrawn its application following objections by Indian authorities. Cannabis sativa - as bhang is called in botanical jargon - has been known to Indians for centuries and its medicinal properties are detailed in Ayurvedic and Unani texts. [xxix] The Traditional Knowledge Digital Library (TKDL) provided the evidence to EPO on 05 November 2010 which accepted the same on 19 June 2012 and terminated the application before granting the patent.[xxx]

Pomegranate

India has foiled an attempt made by a US company to claim a patent at the United States Patent and Trademark Office (USPTO) on the use of pomegranate for the treatment of ulcers. MDIP LLC had filed a patent publication number 20100291249 with title 'Pomegranate derived products for the treatment of skin sores and lesions' in July 2010 claiming the usefulness of pomegranate (punica granatum) for the treatment of ulcer, wound, acne vulgaris and as an antiseptic.

The Traditional Knowledge Digital Library (TKDL), a unit of Council of Scientific & Industrial Research submitted prior art evidences in December 2010 in the form of references in three books from 11th century to 20th century. "We submitted evidences which clearly state that pomegranate has been used alone or in combination with a few other ingredients for the treatment of ulcer, wound, acne vulgaris and as an antiseptic in the Indian system of medicine," TKDL director V K Gupta told HT. The books that were referred to as evidence were Muheet-e-Aza, written by Mohammad Azam Khan in the 19th century, Al-Qaanoon-fil-Tibb written by Abu Ali Ibn-e-Sina in the 11th century and Quraabaadeen Najm-al-Ghani authored by Mohammad Najmul Ghani Khan in the 20th century. A letter written by the TKDL director addressed to USPTO said: "Since sufficient printed prior arts are available in the Indian system of medicine like Ayurveda, Unani and Siddha in relation with the claims made by the applicant, we are filing the third party submission for the same."

The applicant decided to amend the claims on August 14, 2012, but the examiner later rejected all the claims.[xxxi]

Lotus

The claim made by a US company on the usefulness of lotus and cowhage (a herb) for treatment of obesity and hunger at the European Patent Office (EPO) has been foiled by India, largely

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because of submission of prior art evidence from ancient Hindu texts that refutes the claim of novelty.

The US based company Somalab had filed a patent publication no EP2419508 at the European Patent Office (EPO) in 2010. The patent titled 'Method for the induction of a reward response by modulation of dopaminergic systems in the central nervous system ' had claimed the usefulness of lotus and cowhage in the treatment of obesity and hunger control as novel. The patent was 'deemed to have been withdrawn' through a communication by EPO on August 13, 2014.

The Traditional Knowledge Digital Library (TKDL), a unit of Council of Scientific & Industrial Research had submitted prior art evidence in the form of references from ancient books and texts citing evidence that the plants have been used alone or in combination along with few other ingredients for the treatment for the treatment of obesity, polyphagia/excessive hunger and for satiating in the traditional Indian system of medicine.

The claims of the usefulness of a combination of plants — sacred lotus and cowhage for treatment of obesity, polyphagia/excessive hunger and for satiating when the therapeutic effects of claimed plants are already known as traditional knowledge cannot be considered as inventive.[xxxii]

Nutmeg

India also foiled an attempt made by consumer goods giant Colgate-Palmolive to patent a nutmeg mouthwash formula, a statement by the Science & technology Ministry said on July 16, 2015.

The Traditional Knowledge Digital Library of the Council of Scientific & Industrial Research (CSIR-TKDL) had submitted proof in the form of references from ancient books, which said the herb and its extracts of Myristica Fragrans were used for oral diseases in Indian systems of medicine. The Ministry said other third party observations also made submissions against the claims by the global consumer good major.[xxxiii]

Turmeric, pine bark and green tea for treating hair loss

India scored an important success when it fully protected its traditional knowledge by stalling a leading UK-based laboratory's move to patent a medicinal composition containing turmeric, pine bark and green tea for treating hair loss.

The vigilance of the Traditional Knowledge Digital Library (TKDL) of the Council of Scientific and Industrial Research (CSIR) helped protect the Indian products as the council in its submission to the European Patent Office managed to prove that turmeric, pine bark and green

ISSN: 2455-8834

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tea were being used as a treatment for hair loss in Indian systems of medicine like Ayurveda and Unani since ancient times. The UK-based company - Pangaea Laboratories Limited - had filed the patent application in February, 2011. The CSIR-TKDL unit had, however, objected to it and filed evidence on January 13, 2014 once the patent application got published in the European Patent Office website.[xxxiv]

Based on India's evidence, the patent application was finally "deemed to be withdrawn" by the applicant on June 29, 2015.

Turmeric, apple, basil, kalamegha and licorice as anti-inflammatory

The claim made by a US multinational company on the usefulness of turmeric, apple, basil (tulsi) for the treatment of inflammation, psoriasis and gastritis has been foiled by India in 2013, thanks to the efforts of the Traditional Knowledge Digital Library.

Metaproteomics had filed a patent application at the Canada Intellectual Property Office. The patent title "Curcuminoid compositions exhibiting synergistic inhibition of the expression and/ or activity of Cyclooxygenase-2" claimed the usefulness of turmeric, apple, basil, kalamegha and licorice for the treatment of inflammation, psoriasis, gastritis and as anti-inflammatory to be novel.

The Traditional Knowledge Digital Library (TKDL), a unit of Council of Scientific & Industrial Research (CSIR) submitted prior art evidences in the form of references in books from 18th century to the 20th century citing evidences that turmeric, apple, basil, kalamegha and licorice have been used alone or in combination with a few other ingredients for the treatment of inflammation, psoriasis, gastritis and as anti-inflammatory in the Indian systems of medicine. The books that were used by TKDL for citing prior art of evidences include Khazaain-al-Advia, Muheet-e-Azam, Vaidyamanorama, Rasayoga Sagara, Rajanighantauh, Bhavaprakasa, Siddhabhesajamanimala and Ilaaj-al-Amraaz.[xxxv]

ROLE OF MEDIA IN CREATING AWARENESS OF 'BIO-PIRACY OF TRADITIONAL KNOWLEDGE'

1. Since most of the bio-products are found in rural areas so it is very important that local media should make their readers, viewers and listeners aware of the concept of bio-piracy of our traditional knowledge.
2. Media should report such cases of bio-piracy with promptness and highlight such issues so that common people are aware of such happenings.
3. People take their traditional knowledge for granted and are not aware that many developed nations are taking the advantage of this ignorance and are minting name, fame

ISSN: 2455-8834

Volume: 04, Issue: 06 "June 2019"

and money at the expense of our traditional knowledge. Here comes the role of media in letting people know that their age-old knowledge is being exploited by others for economic benefit.

4. Media should make its audience aware of the importance of our traditional knowledge and how we can benefit from utilising such knowledge in the right way.
5. Media should sensitize the people to respect their traditional knowledge and protect it from exploitation.
6. Media should join hands with local NGOs and environment workers in spreading awareness messages among the people about the need to protect our traditional knowledge.
7. Here community radio, local newspapers, magazines and local television channels can play an important role in conserving and protecting our traditional knowledge.

CONCLUSION

Legal tools are being developed whereby developing countries and other biodiversity rich countries may exert greater leverage over the use of their resources. This leverage can be used to earn revenues, promote conservation, and train and educate biochemists. However, the required legal tools — legislation, agreements, and court action — are sophisticated and difficult to employ. It has been far easier to engage in political, economical, technological, and ethical debates than to find legal frameworks for action.

Nonetheless, given the growing legal and practical risks, many organizations have concluded that it is wise to enter into an access and benefit-sharing agreement for every collection.

The biggest hazard of biopiracy is depletion or extinction of species.

The true risk to natural product research is not that the greenhouse door will be shut, thus reducing supply, or that demand for natural products will cease. Rather, the risk is that supply will drop because species are disappearing faster than we can protect and study them.

To quote E. O. Wilson, “useful products cannot be harvested from extinct species.” The most fundamental risk to natural products research is continued loss of biodiversity.

Nature is for the benefit of mankind and it would be incorrect if we limit the use of the gifts of Mother Nature to a particular geographical boundary and deny the rest of the world from its good effects. Traditional knowledge arises from Nature and everyone should have access to it. But the wrong sets in when some people or nations take credit for something which they neither own nor

ISSN: 2455-8834

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invent nor discover. They get those ideas patented which has been in use since yore in some other country.

The findings from this research shows that Media has the potential to help creating awareness in the issue of 'Bio-piracy' but until now no step has not been taken towards achievement of this goal. But much of the issue of 'Bio-piracy' can be tackled with an alert and active media.

Media should make people understand that the traditional knowledge which are underestimated, casually taken for granted, ignored, neglected or in most cases unknown in their place of origin are being exploited in another region for economic benefit. And the result being the loss of bio-diversity. These species are being taken away by the bio-pirates but are not adequately replenished which is the main reason why many important species of nature are fast depleting and vanishing.

AT THE END OF THIS RESEARCH PAPER I WOULD LIKE TO COIN A NEW WORD 'BIO-RESPECTING' WHICH WOULD MEAN THE REVERSE OF BIO-PIRACY OR BIO-PROSPECTING.

The researcher defines Bio-respecting as:

"Bio-respecting would mean modest respect and acknowledgement of the traditional knowledge of indigenous people by promising to recognize them, their knowledge and their geographical area in formulation of products for the greater benefit of mankind; and compensating by giving them a portion of the economic advantages derived therefrom."

It is high time if we do not take some action our traditional knowledge would only be available on books and we would be deprived of their benefits in our lives.

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