TRADITIONAL MEDICINES AND IPR PROTECTION - AN ANALYSIS

PAPER CODE-LAJ/V-1/I-2/07

BY- Miss Yash Tiwari,
Assistant Professor, Career College of Law, Bhopal.

'IF I HAVE SEEN FURTHER IT IS BY STANDING ON THE SHOULDERS OF GIANTS'
Sir Issac Newton

Contribution of the traditional and indigenous peoples to the conservation of the world's biodiversity and related traditional medicinal information is immense. Everyday ethno-botanical and related surveys and researches provide new information about the cure of various diseases, body improvement and skin care remedies, natural oils and other health care objects.

New experiments are beginning to emerge on benefit-sharing models for indigenous innovation. An experience in India is worth sharing. It relates to a medicine that is based on the active ingredient in a plant, *Trichopuszeylanicus*, found in the tropical forests of south western India and collected by the *Kani* tribal people.

Scientists at the Tropical Botanic Garden and Research Institute (TBGRI) in Kerala learned of the plant, which is claimed to bolster the immune system and provide additional energy, while on an expedition with the *Kani* in 1987. These scientists isolated and tested the ingredient and incorporated it into a compound, which they christened 'Jeevan', the giver of life. The tonic is now being manufactured by a major Ayurvedic drug company in Kerala. TBGRI agreed to share the license fee and royalty with the tribal community on a fifty-fifty basis and formed a registered trust with an understanding that the interest accrued from this amount alone can be used for the welfare activities of the Kani tribe.

Definitions of Tradition medicine:

- **World Health Organisation (W.H.O)**

Traditional medicine (TM) refers to the knowledge, skills and practices based on the theories, beliefs and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness. Traditional medicine covers a wide variety of therapies and practices which vary from country to country and region to region. In some countries, it is referred to as "alternative" or "complementary" medicine (CAM).

Traditional medicine has been used for thousands of years with great contributions made by practitioners to human health, particularly as primary health care

providers at the community level. TM/CAM has maintained its popularity worldwide. Since the 1990s its use has surged in many developed and developing countries

Traditional medicine (also known as **indigenous or folk medicine**) comprises unscientific knowledge systems that developed over generations within various societies before the era of modern medicine. Practices known as traditional medicines include herbal, Ayurveda, Siddha medicine, Unani, ancient Iranian medicine, Islamic medicine, traditional Chinese medicine, traditional Korean medicine, acupuncture, Muti, Ifá, traditional African medicine, and other pseudo medical knowledge and practices all over the globe.

In developing countries, the issues of traditional knowledge have assumed a critical dimension in the area of intellectual property rights. The phrase "Traditional Knowledge" implies the development and transmission of the knowledge from generation to generation within a system, held by local individuals, families, lineages or indigenous communities. From time immemorial, these local individuals or communities have a store-house of knowledge about their geographical flora and fauna. However, the local individuals and communities do not have the means to safeguard their traditional knowledge in the increasing global process of extraction, exploitation and commercialization of the biodiversity of the Third World. It is a stark reality that globalization is threatening the biodiversity, bio-information and creativity of indigenous approaches into proprietary knowledge for the commercial profit of a few. The existing IPR agenda is oriented around the concept of private ownership and individual innovation which encourages the co-modification of traditional knowledge without benefit sharing to indigenous communities[1].

DEFINITIONS OF TRADITIONAL KNOWLEDGE:-

The word tradition means 'the passing on of customs or beliefs from generation to generation', 'a long establish custom or belief passed on this way '[2]. The term traditional knowledge has been defined by World Intellectual Property Organisation (WIPO) as

"Traditional knowledge itself has a number of different subsets, some of them designated by expressions such as indigenous knowledge, folklore, traditional medicinal knowledge and others. Contrary to common perception, traditional knowledge is not necessarily ancient it is in evolving all the time. A process of periodic, even daily creation as individuals and communities take up the challenges presented by the social and physical

[1]Bhawani Shanker Mishra, Huge Commercial Implications of GI in Third World (2003) at page 202.

[2] See, C. Soanes(ed.), the compact oxford refrence dictionary, 463(oxford university press, 2001). Also see, A.S.Harnby(ed.), Oxford advanced learner's dictionary of current English, 889(oxford university press, 1987)

environment. In many ways traditional knowledge is contemporary knowledge. Traditional knowledge is embedded in traditional knowledge systems. The systems oxford university press, 2001that each community has developed and maintained in its local context."

A perusal of World Wide Web (www.) reveals the following meaning of traditional knowledge:"a cumulative body of knowledge and beliefs handed down through generations by cultural transmission, about relationship of living things (including humans) with one and another and with their environment. Traditional Knowledge is an attribute of societies with historical continuity in resource use practices."[3]
Knowledge has evolved in a day. Development of all knowledge is generally. A famous saying of Sir Issac Newton is quiet appropriate for the proposition that development of knowledge is incremental.

Traditional knowledge generally exists in oral form and is generally transmitted from generation to generation in the communities by observation of practices and is not learnt in schools, colleges or universities.

WHY SHOULD TRADITIONAL KNOWLEDGE BE PROTECTED?

Traditional knowledge holders face various difficulties. In some cases, the very survival of the knowledge is at stake, as the cultural survival of communities is under threat. External social and environmental pressures, migration, the encroachment of modern lifestyles and the disruption of traditional ways of life can all weaken the traditional means of maintaining or passing knowledge on to future generations. There may be a risk of losing the very language that gives the primary voice to a knowledge tradition and the spiritual world-view that sustains this tradition. Either through acculturation or diffusion, many traditional practices and associated beliefs and knowledge has been irretrievably lost. Thus, a primary need is to preserve the knowledge that is held by elders and communities throughout the world. Another difficulty facing traditional knowledge holders is the lack of respect and appreciation for such knowledge. For example, when a traditional healer provides a mixture of herbs to cure a sickness, the healer may not isolate and describe certain chemical compounds and describe their effect on the body in the terms of modern biochemistry, but the healer has, in effect, based this medical treatment upon generations of clinical trials undertaken by healers in the past, and on a solid empirical understanding of the interaction between the mixture and human physiology. Thus, sometimes the true understanding of the value of traditional knowledge maybe overlooked if its scientific and technical qualities are considered from a narrow cultural perspective. With the gradual recognition

[3]See www.ceamf.ca/01_who/01_definitions.htm, last visited on may 25 2016.

of the value of traditional knowledge and an exponential growth in the use of traditional knowledge products the greatest threat against it is that of usurpation over-exploitation by commercial entities in derogation of the rights of the original holders.

Some of the reasons are mentioned below:

a) **Devolution:**

As demand for commercialization of biodiversity and traditional knowledge increases at a rapid pace and as the world globalizes, develops and modernizes, indigenous societies are being encroached upon faster than traditional knowledge can be protected. Their cultures and knowledge are being lost. In many parts of the world, the very existence of indigenous societies is under threat.

b) **Encroachment, Bio-prospecting and Bio-piracy:**

One of the biggest threats to biodiversity and related traditional knowledge is ever-increasingly bio-prospecting activities on behalf of enthobotonists, pharmaceutical companies and others who wish to profit from the rich biodiversity and traditional knowledge in indigenous territories.

Current legal systems are inadequate, allowing for the biopiracy of biodiversity and traditional knowledge. "Legislation is required and it is required yesterday," says Noiwazi Gcaba, a South African patent attorney.[4]

c) Inadequacy of Legal Systems that Address Traditional Knowledge

PROTECTION OF TRADITIONAL MEDICINE AS TRADITIONAL KNOWLEDGE

The "protection" of traditional medicine under IPRs - generally as part of "traditional knowledge"- has been advocated in many national, regional and international fora, documents and academic work. The provision contained in article 8 (j) of the Convention on Biological Diversity (CBD), as adopted in 1992, triggered a number of proposals to deal with this issue at the national and international level[5]. Most notably, in 2000, an Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore was established under the auspices of WIPO[6].

The need for applying IPRs to traditional medicine depends upon the type of objectives pursued, and the extent to which they can be fulfilled by different modalities of IPRs, existing or to be created. Since IPRs are not an end in them, the establishment of IPRs should be

[4]Black, Michael, "Traditional Knowledge: Lessons from the Past, Lessons for the Future," p. 3, paper presented at conference, "Biodiversity, Biotechnology and the Protection of Traditional Knowledge," Washington University in St. Louis School of Law, Conference, April 4-6, 2003.

[5]See e.g. the Report of the UN Secretary General on the Intellectual Property of Indigenous Peoples, EICN.41 Sub.2/1992/30.

[6]This Committee (hereinafter the "WIPO Committee") held its first meeting in Geneva, on April 30 to May 3, 2001.

considered as a means to effectively reach well defined goals[7].

The main goals suggested or implied in various analyses for IPRs protection of traditional knowledge, including traditional medicine, have been equity, the preservation of knowledge against erosion, preventing misappropriation, promoting self-determination and the right to development. In certain combinations these goals partially interconnect or overlap, while in others they are mutually incompatible[8].

All of these goals have some legitimacy. However, as examined below, IPRs in many cases, may not be a suitable tool to achieve the intended goals, and other effective instruments may have to be utilized. The following sub-sections briefly present the arguments advanced for the IPRs protection of traditional knowledge, as relevant to traditional medicine.

SYSTEMS OF TRADITIONAL KNOWLEDGE PROTECTION

There are two forms of intellectual property related protection systems with regards to traditional knowledge. They are:

- **Positive protection**, i.e. giving traditional knowledge holders the right to take action or seek remedies against any misuse of traditional knowledge. Any systemof positive protection of traditional knowledge must provide for:

• Recognition of value and promotion of respect for traditional knowledge systems.
• Responsiveness to the actual needs of traditional knowledge holders.
• Repression of misappropriation of traditional knowledge and other unfair and inequitable uses.
• Protection of tradition based creativity and innovation.
• Support of traditional knowledge systems and empowerment of traditional knowledge holders.
• Promotion of equitable benefit sharing from use of traditional knowledge.
• Promotion of the use of traditional knowledge for a bottom up approach to development.

- **Defensive protection,** i.e. safeguarding against illegitimate intellectual property rights acquired by third parties over traditional knowledge. Any system of defensive protection of traditional knowledge must provide for:

• The criteria defining relevant prior art apply to the traditional knowledge.
• A mechanism to ensure that the traditional knowledge constituting prior art is available and accessible to search authorities.

It is suggested that these two approaches should be undertaken in a complementary way as a comprehensive approach to protection of traditional knowledge is unlikely to rely totally on any one form.

[7]On the rationale for the granting of IPRs, see, e.g., Penrose, 1951; Gutterman, 1997; Bettig, 1996.

[8]For instance, the type of measures required to prevent the granting of IPRs over traditional medicine under a misappropriation approach, are essentially incompatible with those aimed at encouraging the commercialization of TRADITIONAL MEDICINE through the acquisition of IPRs.

terms associated with traditional knowledge may be protected as distinctive marks.

LEGAL CONCEPTS FOR THE PROTECTION OF TRADITIONAL KNOWLEDGE

Certain other legal concepts for traditional knowledge protection are:

- **Prior Informed Consent**: As per this principle traditional knowledge holders should be fully consulted before third parties use their knowledge.
- **Equitable Benefit Sharing**: This principle prescribes the balancing of the interests of the right holders and the general public.
- **Unfair Competition**: Unfair competition means any act of competition contrary to honest practices in industrial or commercial matters and includes various acts that mislead the public or cause confusion. This principle allows for action to be taken against false or misleading claims that a product is authentically indigenous, or has been produced or endorsed by, or otherwise associated with, a particular traditional community.
- **Patents**: When practitioners innovate within the traditional framework, they can use the patent system to protect their innovations.
- **Distinctive signs**: such signs include trademarks, collective marks, certification marks and geographical indications. Traditional signs, symbols and
- **Customary laws:** Customary laws, protocols and practices are the ones which define how traditional communities develop, hold and transmit traditional knowledge.

Certain non IPR mechanisms of traditional knowledge protection

Traditional knowledge has been protected by certain mechanisms which are beyond the domain of intellectual property. Such mechanisms are:

- **Environmental:** Concluded in 1994, the UN Convention to Combat Desertification provided for the protection of traditional knowledge in the ecological environments as well as the sharing of benefits arising from any commercial utilization of this TK
- **Health:** The World Health Organization has recognized the relevance of traditional knowledge in the field of medicine as a source of primary health care in the Primary Health Care Declaration.
- **Trade and Development**: The Doha Declaration adopted by the World Trade Organization in the Doha Ministerial Conference, in 2001, instructed the TRIPS Council to examine issues regarding the protection of traditional knowledge.
- **Food and Agriculture:** The International Treaty on Plant Genetic Resources for Food and

Agriculture provides for the recognition of farmers rights and the protection of traditional

- knowledge relevant to plant genetic resources for food and agriculture.

TRADITIONAL MEDICINE AND IPR PERSPECTIVE

Traditional medicine (TM) plays a crucial role in health-care and serves the health needs of a vast majority of people in developing countries. Access to "modem" health care services and medicine may be limited in developing countries. TM becomes the only affordable treatment available to poor people and in remote communities. World Health Organization (WHO) defines traditional medicine as the sum total of all the knowledge and practices, whether explicable or not, used in diagnosis, prevention and elimination of physical, mental or social imbalance and relying exclusively on practical experience and observations handed down from generation to generation, whether verbally or in writing. Health care providers worldwide including major pharmaceutical giants are turning to incorporate many of these into their mainstream activities. As traditional medicines are largely based on medicinal plants, indigenous to these countries, where the system has been in vogue for several centuries, the effort is on accessing them either directly or through the use of modem tools of breeding and cultivation, including tissue culture, cell culture and transgenic technology. IP issues linked to such endeavors remain unresolved[9].

The protection of Traditional medicine (TM) under intellectual property rights (IPRs) raises two types of issues. First, to what extent it is feasible to protect, existing IPR system. Certain aspects of TM may be covered by patents or other IPRs. There have also been many proposals to develop sui generis systems of protection. Such proposals are based on the logic that if innovators in the formal' system of innovation receive a compensation through IPRs, holders of traditional knowledge should be similarly treated. The codification of TM varies significantly. A distinction can be made, particularly in Asia, between the codified systems of 'traditional medicine' and non-codified medicinal knowledge, which includes 'folk', 'tribal' or 'indigenous' medicine.

Thus, in India, folk traditions are handed over orally from generation to generation. The 'folk' medicine is based on traditional beliefs, norms and practices based on century's old experiences of trials and errors, successes and failures at the household level. These are passed through oral tradition and may be called, 'people's health culture', home remedies or folk remedies. Traditional medicine (TM) may be possessed by individuals. In some cases, or instance, healers use rituals as

[9] R.A. Mashelkar, Intellectual Property rights and the Third World, Special Section: Science in the Third World, Current Science, Volume 81, No. 8,25 October 2001, at page 959.

part of their traditional healing methods, which often allow them to monopolize their knowledge, despite disclosure of the photochemical products or techniques used. The codified tradition consists of medical knowledge with sophisticated foundations expressed in thousands of manuscripts covering all branches of medicine. Examples are Ayurveda, Siddha, Unani and the Tibetan tradition. The grant of patents on non-original innovations (particularly those linked to traditional medicines), which are based on what is already a part of the traditional knowledge of the developing world have been causing a great concern to the developing world[10].

These problems of modification of traditional knowledge, under advantages of patents, ownership of genetic information and information not owned by the true creator are symptoms of a deeper problem with the whole idea of intellectual property. Unlike goods, there are no physical obstacles to provide an abundance of ideas. Intellectual property is an attempt to create an artificial scarcity in order to give rewards to a few at the expense of the many. Intellectual property aggravates inequality. It fosters competitiveness over information and ideas, whereas cooperation makes much more sense. In the words of Peter Drahos, researcher on intellectual property, "Intellectual property is a form of private sovereignty over a primary good-information."[11]

INTERNATIONAL CONVENTIONS

There are two important international conventions that have bearing on intellectual property rights in indigenous knowledge systems. These are the **WORLD TRADE ORGANIZATION'S TRADE RELATED ASPECTS OF INTELLECTUAL PROPERTY RIGHTS (TRIPS) AND THE CONVENTION ON BIOLOGICAL DIVERSITY (CBD)**. TRIPS is a key international agreement promoting the harmonisation of national IPR regimes. Although TRIPS covers four types of intellectual property rights- Patents, geographical indications, undisclosed information (trade secrets) and trademarks, it does not acknowledge or distinguish between indigenous, community-based knowledge and that of industry. Furthermore, it makes no reference to the protection of traditional knowledge, but however,

Article 27.3b provides that members may also exclude from patentability plants and animals other than microorganisms and essentially biological processes for the production of plants or animals other than non-biological and microbiological

[10]Ibid

[11]Peter Drahos, Decentring Communication: The Dark Side of Intellectual Property, in Tom Campbell and Wojciech Sadurski (eds.) Freedom of Communication (Aldershot: Dartmouth, 1994) at page 274

processes. However, members shall provide for the protection of plant varieties either by patent or by effective sui generis system or by any combination thereof.

The CBD is the only major international convention that assigns ownership of biodiversity to indigenous communities and individuals and asserts their right to protect this knowledge. Two articles of this convention are particularly relevant:

Article 8 (j): State Parties required to "respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote the wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilisation of such knowledge, innovations and practices."

Article 18.4: Contracting Parties should "encourage and develop models of cooperation for the development and use of technologies, including traditional & indigenous technologies.

TYPES OF INDIGENOUS MEDICAL KNOWLEDGE

Individual Knowledge: In some cases, individuals produce traditional medical knowledge without any interface with the community or outsiders. In such cases, the knowledge is held by individuals (individual knowledge). For instance, some individual traditional healers continuously improve or innovate on existing body of knowledge through sustained observation and experimentation. Some traditional health practitioners have appropriated modern biomedical technologies such as the use of x-rays and laboratory tests to improve on their knowledge.

***Distributed Knowledge*:** In other cases, knowledge is in the possession of some but not all members of a group (distributed knowledge). In such cases, the knowledge is asymmetrically distributed among individuals within a group, even though such individuals may not be aware that others in and outside the community share the same knowledge[12]. "Individual" and "distributed" knowledge are often interconnected in that sometimes healers compare notes and share remedies across quite wide geographic areas.

Communal Knowledge: Certain medical knowledge may be available to virtually all members of a group (communal knowledge). In such a case, the knowledge is freely available to its members although it may concentrate among the old members of the society. In every community, for example, there are plants, which are well known to have some medicinal properties. Traditionally, the attitudes towards the appropriation and sharing of knowledge vary significantly among different local/indigenous cultures. In some cases a strong sharing ethos prevails, leading to the rejection of any form of individualistic Western style appropriation. In other cultures, the concept of property in knowledge exists in a manner comparable

[12](Bonabeau and Theraulaz, 1994)

to IPRs, with some degree of sale or exchange of knowledge as a commodity[13]. The possession of knowledge by individuals, in effect, does not mean that such knowledge is perceived by communities as not belonging to them. Although at any one time, knowledge may only be held by a handful of people with special roles in the community, in the course of the history of that community it

becomes essentially communally held knowledge. This is because those with the special knowledge do not "own" it as such, and many have obligations to share the knowledge within the community. There may exist, for instance, community standards for when the information must be passed, such as during initiation rituals. These features indicate slight but important differences between the meaning of individual property in Western culture, and knowledge held by individuals within a non-Western community context.

SOME IMPORTANT CASES:-

Turmeric Patent Case

Two US-based Indians[14] were granted a US Patent[15] on Use of turmeric in wound healing. The patent was assigned to University of Mississippi Medical Centre, USA. This patent claimed the administration of an effective amount of turmeric through local and oral route to enhance the wound healing process, as a novel finding. Any patent, before it is granted, has to fulfil the basic requirements of novelty, non-obviousness and utility. Thus, if the claims have been covered by relevant published art, then the patent becomes invalid. Council of Scientific and Industrial Research (CSIR) could locate 32 references (some of them being more than one hundred years old and in Sanskrit, Urdu and Hindi), which showed that this finding was well known in India prior to filing of this patent. The formal request for re-examination of the

patent was filed by CSIR at United State's Patent and Trademark Office (USPTO) on 28 October 1996. On 20 November 1997, the examiner rejected all the claims once as being anticipated and obvious. The re-examination certificate was issued on this case on 21 April 1998 bringing the re-examination proceedings to a close.

THE CASE OF AMAZON RAINFOREST PLANT PATENT

Many traditional healers and religious leaders from the indigenous tribes of the Amazon used to collect a plant named Baniste-riopsiscaapi, and process it to produce a ceremonial drink - 'ayahausca', also called 'yage'. They used ayahausca in religious and healing ceremonies. According to tradition, ayahausca was prepared and administered only under the guidance of traditional healers. A Plant[16] claimed rights over a supposed variety of B. caapi, which Miller dubbed 'Da Vine'. The challenge to this patent was made by

[13]Dutfield, 2000a, p. 281- 282; Dutfield, 2000b, p. 288

[14]Suman K. Das and HariHar P. Cohly

[15]Patent no. 5,40,504 on 28 March 1995.

[16]Patent No. 5,751, issued to Loren Miller on 17 June 1986 by United States Patent and Trademark Office(USPTO)

the Centre for International Environment Law (CIEL), on behalf of the Coordinating Body of Indigenous Organizations of the Amazon Basin (COICA) and the Coalition for Amazonian Peoples and Their Environment (Amazon Coalition). COICA is a coordinating body of more than 400 tribes.

Although the patent claimed to have identified a variety of the species with new and distinctive physical features, particularly the colour of the flower. But

according to Prof. William A. Anderson of the University of Michigan, a leading expert on the plant family to which B. caapi belonged, the features described as 'prior art' were already there in the records of major herbaria. Further, this plant grew naturally throughout the Amazon basin. By law, plant patents cannot be awarded to plants 'found in an uncultivated state'. On re-examination, USPTO revoked this patent on 3 November 1999. However, the inventor was able to convince the USPTO on 17 April 2001, the original claims were reconfirmed and the patent rights restored to the innovator.

Neem Oil Case

The US has been taking undue advantage of the low level of patent awareness and laxity in enforcement of law. The Neem tree is used in India in the areas of medicine, toiletries, contraception, timber, fuel and agriculture. Its uses have been developed over many centuries but never patented. Since the mid-1980s, US corporations have taken out over a dozen patents on Neem- based materials, When the US Patents Office (USPTO) granted patent for 'Neem oil' for antiseptic use, the Council of Scientific and Industrial Research (CSIR) urged for re-examination of the case, but without success. In this way, collective local knowledge developed by Indian researchers and indigenous communities has been expropriated by

outsiders who have added very little to the process.[17]

CONCLUSION:

There is a problem on the grant of such patents linked to the indigenous knowledge of the developing world that needs to be addressed jointly by the developing and the developed world. We need to understand that there is a distinction between the patents that are granted based on modem research and patents, which can be categorized as traditional knowledge-based patents. The issue of 'protection' of traditional knowledge needs to be looked at from two perspectives, the 'protection' may be granted to exclude the unauthorized use by third parties of the protected information. On the other hand, the 'protection' also means to preserve traditional knowledge

[17]Vandana Shiva and RadhaHolla - Bhar, Intellectual Piracy and the Neem Tree, Ecologist, Volume 23, No. 6,1993, at pages 223-227.

from uses that may erode it or negatively affect the life or culture of the communities that have developed and applied it. Further, the protection also promotes self-respect and self-determination. While recognizing the market-based nature of IPRs, other non-market-based rights could be useful in developing models for a right to protect traditional knowledge, innovations and practices.IPR are inadequate and inappropriate for protection of traditional ecological knowledge and community resources because they:

- recognize individual, not collective rights;
-require a specific act of "invention";
-simplify ownership regimes;
-stimulate commercialization;
-recognize only market values;
-are subject to economic powers and manipulation;
-are difficult to monitor and enforce;
-are expensive, complicated, time-consuming[18].

SUGGESTIONS:

- Developing countries need a systematic documentation of traditional medicine for protection purposes, regional and inter-regional information exchange and compilation of the requisite databases etc. To mitigate this problem, the Indian Government has taken steps to create a Traditional Knowledge Digital Library (TKDL) on traditional medicinal plants and systems, which will also lead to a Traditional Knowledge Resource Classification (TKRC). Linking this to internationally accepted International Patent Classification (IPC) System will mean building the bridge between the knowledge contained in an old Sanskrit Shloka and the computer screen of a patent examiner in Washington. This will eliminate the problem of the grant of wrong patents since the Indian rights to that knowledge will be known to the examiner. It is right time that India must evolve a viable and effective mechanism to protect the biodiversity, bio-information and creativity of indigenous communities.
- To date, debate on IPRs and biodiversity has focused on patents and plant breeders' rights. Provisions under undisclosed information or trade secrets could be invoked to protect traditional knowledge not available in the public domain.
- Geographical indications and trademarks, or sui generis analogies, could also be the alternative tools for indigenous and local communities seeking to gain economic benefits from their traditional knowledge.
- The conservation and sustainable development of biodiversity require a diversity of approaches; therefore, sound collaborations should be formed between CBD–WHO and WTO (World Trade Organization) and groups such as IUCN (The World Conservation

[18] Posey, D. A., "Commodification of the sacred through intellectual property rights" Journal OfEthno pharmacology, 83, 3-12, (2002).

Union)/SSC (Species Survival Commission).

- Access to these databases for patent authorities and relent judicial authorities could be facilitated through the establishment of an international gateway for traditional knowledge, which would electronically link this data based.

- Databases should only disclose traditional knowledge already in the public domain or traditional knowledge for which prior inform consent has been obtained.
- Access these data based should not involve costly or burdensome procedures.