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PRESERVATION OF INDIGENOUS MEDICINAL KNOWLEDGE OF TRIBAL PEOPLE THROUGH ICT

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ABSTRACT

India is a veritable emporium of herbs. The inhabitants of India knew the medicinal value of plants from time immemorial. Tribal people's knowledge on medicinal flora of their surroundings is ingenuous. The knowledge and awareness of these medicinal plants is extremely useful to the tribal populations which depend more on such remedies than a physician's recipe which is not easily available for them. Tribal medicine is more effective in health promotion and disease prevention. It is a natural process in curing the diseases of indigenous people across the world. Tribal people are eco-friendly and used to find cures to all their ailments from the nature. It is a known fact that plant alkaloids play very important role in the therapeutic activity and they have been in use in indigenous culture since a long time. New molecules extracted from plant alkaloids are introduced for treatment of various diseases like infections, hyper tension, diabetes, cancer etc. under Modern medicine.
Modern world recognised the high value and importance of Indigenous knowledge and the need to preserve it through information technologies (IT). Information and Communication Technology (ICT) can play significant role in capturing the knowledge, its management and dissemination. Also an urgent need is there to identify utmost unresolved issues which demands further collaborative research and development and closer cooperation between Indigenous communities, researchers and software developers. Such coordinated effort can provide needed relief to humanity from the chronic ailments and at the same time it offers required comforts to the tribal communities to sustain the practices with the rights over knowledge shared and mitigate bio-piracy of knowledge which they helped to record. Providing rights of knowledge to the indigenous persons be given utmost importance, to facilitate the process of collecting and recording the knowledge without hindrance.

INTRODUCTION

Tribal communities often live in harmony with nature's rhythms. The world population of indigenous people is approximately 370 million, living in over seventy countries (UN document 2009) (Fig 2). Of these 70 million indigenous women and men are dependent on forests for their livelihood (UN document 2016).

Tribal and folk medicinal practices comprise one of the most significant components of primary health care provision in South Asian context. With over 2000 tribal groups comprising millions of people in forests, more communities living outside "mainstream". The South-Asian countries- Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka - together hold a wealth of tribal medicinal practice traditions, most of which remain undocumented and not fully understood. Even today there are tribes in Amazon rainforest and other deep forests of the world, who feel people from the outside their location, are aliens.

The folklore medicinal practices are source for important discoveries, in modern medicine. The reliance of many millions of people on traditional systems of medicine, and its importance in the respective cultures of those who practice them, is well recognized. The contributions of folk and tribal medicinal systems significantly contributed to Ayurveda, Unani, Naturopathy, Homeopathy and Allopathy which are well documented systems. Proper harnessing and preservation of this knowledge base is essential to achieve the WHO goal of 'Health for All'. UNESCO declared 1993 as the International Year of World's Indigenous People in an effort to highlight the threats faced by tribal cultures around the world (Fig 1). To commemorate these contributions of tribal people every year

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August 9th is observed as the International Day of the World's Indigenous People.

Historical perspective in Indian context

Indian tribal people play a key role in the cultural heritage of India. Various tribal groups existed in the country since ancient times. They occupied a major part in the history of India and considered as the original inhabitants of India. About 104.2 million tribal Population is spread across different parts of India and they form 8.6% of the population of India (Table 1, 2011 census). The traditional and cultural distinction of each tribal community has made them distinguishable from each other and their heritage adds colour and variation to the Indian culture. They occupied around 15% of the country`s area. About 93% of tribal population live in rural areas comprising various ecological and geo-climatic conditions ranging from plains, forests, hills and inaccessible areas that perhaps lie dotted in the panoramic Indian terrain.

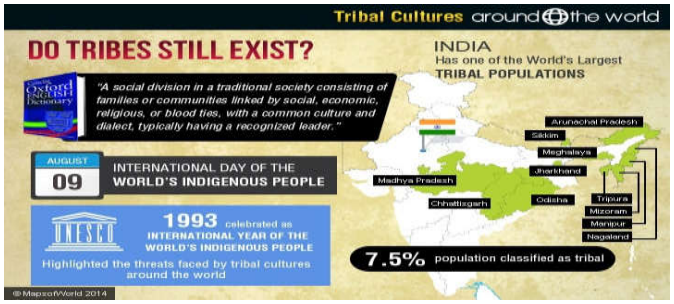

Fig 1 Image showing Tribal's existence in India

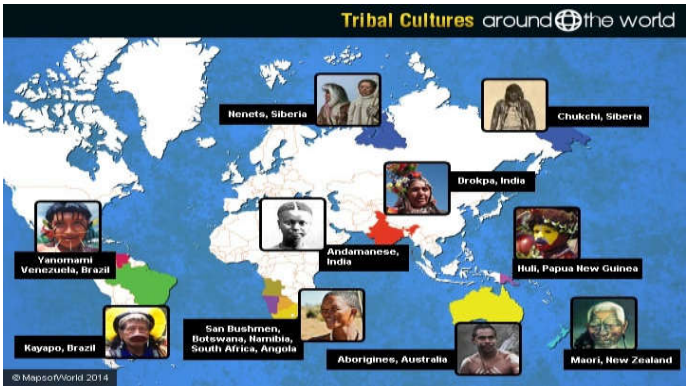

Fig 2 Image showing Tribal'sExistence around the world.

Source: https://www.mapsofworld.com/around-the-world/tribes.html

Community dependence on forest:

Forest plays an important role in providing livelihood for tribal communities. About 60% of the tribal communities directly rely on forest for their day-to-day requirements while ensuring ecological balance. These communities lived in wilderness for many generations and developed deep insights on the forest flora and fauna that is unique, genuine and considered as indigenous knowledge. The fact that an average tribal family draws half of its annual income from forest, 18% from agriculture, 13% from cattle and 18% from other employment (Maikhuri *et al.*,1998), (MoEF, 1996) reveals their intense connection with forests and their ability to safeguard the wild shows a symbiotic interdependence between the community and the forests.

Table 1
Tribes in India: Regional Classification

States	Major Tribes	No. of Tribes	PTGs
North East			
Mizoram	Lusai, Kuki, Garo, Khasi, Jayantia, Mikir etc.	15	NA
Nagaland	Naga, Kuki, Mikir, Garo, etc.	05	NA
Meghalaya	Garo, Khasi, Jayantia, etc.	17	NA
Sikkim	Lepcha, Bhutia, Limbu, and Tamang	4	NA
Tripura	Chakma, Garo, Khasi, Kuki, Lusai, Liang, Santhal etc	19	01
Arunachal Pr	Dafla, Khampti, Singpho etc.	16	NA
Assam	Boro, Kachari, Mikir (Karbi), Lalung, Hajong etc	15	NA
Manipur	Meities, Pangals, Naga tribes, Kuki etc.	33	01
East			
Orissa	Birhor, Gond, Juang, Khond, Korua, Oraon, Tharua,	62	13
West Bengal	Asur, Birhor, Korwa, Lepcha, Munda, Santhal, etc.	40	03
Bihar Jharkhand	Asur, Banjara, Birhor, Korwa, Oraon, Santhal, etc. Biga, Banjara, Bathudi, Bedia, Bhumij, Chik, Baraik, etc	33 30	09
Central			
Madhya Pradesh	Bhil, Birhor, Damar, Gond, Kharia, Oraon, Parahi, etc.	21	03
Chhattisgarh	Gond, Baiga, Korba, Bison Horn Maria, Halba etc.	31	04
West			
Gujarat	Bhil, Dhodia, Gond, Siddi, Bordia, etc.	31	05
Rajasthan	Bhil, Damor, Garasia, Meena, Sahariya etc.	12	01
Maharashtra	Bhil, Bhunjia, Chodhara, Dhodia, Nayaka, Rathwa etc.	48	03
Goa	Dhodi, and Siddi (Nayaka).	08	NA
Daman & Diu	Dubla, Dhodia, Varli, Naikda & Siddi	5	NA
Dadra&Nagar	Dhodia, Dubla, Kathodi, Kokna, Koli, Dhor, and Varli	7	NA
North			
UP & Uttaranchal	Bhoti, Buxa, Jaunsari, Tharu, and Raji	15	2
Himachal Pradesh	Gaddi, Gujjar, Lahuala, Swangla, etc.	10	NA
J&K	Chdddangpa, Garra, Gujjar, Gaddi, etc.	12	NA
South			
Andhra Pradesh	Bhil,Chenchu, Gond, Kondas, Lambadis, Sugalis etc.	35	12
Kerala	Adiyam, Kammrar, Kondkappus, Malais, Palliyar, etc.	43	05
Tamilnadu	Irular, Kammara, Kondakapus, Kota, Toda etc.	36	06
Karnataka	Bhil, Chenchu, Goud, Kuruba, Koya, Mayaka, Toda,	50	02
Islands			
Andaman& Nicobar Islands	Jarawa, Nicobarese, Onges, Sentinelese, Shompens and Great Andamanese	06	05
Lakshadweep	Amindivi, Koyas, Malmis and Malacheries	0	NA

Source: Classified based on Annual Report, 2012-13, Ministry of Tribal Affairs.
Note: NA (Not Available): No PTGs are available in these states.

Indigenous knowledge on medicine in India

Indigenous people work on body and mind together to cure illness. Medicinal plants are used to treat the spiritual origins of disease as well as the physical symptoms. The vast knowledge of such plants and role played by indigenous people as custodians of the world's 'genetic heritage' is acknowledged by the world. A botanical survey revealed that tribal people of north-east region use plant drugs to cure fevers, bronchitis, blood and skin diseases, eye infections, lung and spleen ulcers, diabetes, and high blood pressure. Knowledge on their use is passed on by 'Vaiyas', Indian herbal medicine octors. The Kameng and Lohittribes in Arunachal Pradesh use paste of Fritillaria cirrhosa in bulk to relieve muscular pains. Research confirmed the presence of cocaine like chemical in a plant related to Fritillaria. In Karjat, tribal area of Maharashtra, studies revealed that a native herb taken twice a year is found to be effective contraceptive. Further it was concluded that traditional health practices can provide half of local primary health needs. The herbal bandage for fractured bones at Puttur, Andhra Pradesh (Ashok Kumar Panda and Suvendu Rout, 2011) and medicine administered through fish for Asthma at Hyderabad, Telangana, (Ramaiahbheenaveni, 2012) for generations stand as good examples but the information on herbs used is yet to be documented.

Indigenous knowledge is vital and unique to a given culture or society. As logistic and communication issues prevent their access to normal medical facilities they found an alternative by gathering and preserving the knowledge on traditional medicine that became the most easily available and affordable source for them. Because of their scattered and far flung

settlements, and problems arising due to transportation and communication, traditional medicine has remained as the most affordable and easily accessible source of treatment.(Yinegar and Yewhalaw, 2007). Scientific evaluation and utilization of this knowledge is essential to generate a base line data on diverse ethno-medicinal plants used by the communities to achieve maximisation of useful drug discovery as well as conservation and sustainable utilization of natural resources for human welfare. Research Scientists from Tirupati region had already initiated creation of base line data by collaborating with the indigenous people (Vedavathy, 1997).

Knowledge with the indigenous communities of the World

In many parts of the World, indigenous people classify soil, climate, plant and animal species and recognise their special characteristics. In the process they were able to classify flora and fauna that is not yet identified by the world's botanists and entomologists. The Hanunoo people of the Philippines classified 1600 plant species in their forest, which are 400 more than described bys cientists working in the same area. More than 85% of the estimated 250,000 - 500,000 plant species in the world exist in traditional home environments of indigenous people. Nearly 75% of 121 plant derived prescription drugs used worldwide were discovered from leads by indigenous medicine (Burger, 1990). Globally, indigenous people use 3000 different species of plants to control fertility. The Kallaywayas, wandering healers of Bolivia, make use of 600 medicinal herbs; traditional healers in Southeast Asia may employ as many as 6500 plants for drugs. Some scientists believe that indigenous knowledge may help them to discover important new cures for diseases such as AIDS and cancer. Worldwide, over 3000 plants are employed for contraceptive use (Burger, 1990).

Transfer of indigenous knowledge

Indigenous knowledge is also used as basis for local-level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities (Warren, 1991). “Indigenous knowledge is predominantly tacit, embedded in the practices and experiences of its holders . . . commonly exchanged through personal communication and demonstrations from the teacher to the apprentice, from parents to children, from neighbour to neighbour” (Sithole, 2007).

The tribes all over world developed their system of medical practices based on ethnic culture, which are popularised as folklore medicines and ethno-medicines. They developed their own folk processes based on traditional beliefs and practices for curing various forms of diseases. The practitioners orally transferred beliefs and practices on curing diseases from one generation to the other (Guruprasad *et al*., 2013).

Our country since ancient times people were solely dependent on herbal medicine for curing various ailments. Indigenous knowledge is the local knowledge that is unique to a culture or society. Other names for it include: ‘local knowledge’, ‘folk knowledge’, ‘people’s knowledge’, ‘traditional wisdom’ or ‘traditional science’. “Indigenous plant wisdom has been carefully discovered over thousands of years and passed down from one generation to the next through oral communication and hands-on experience (apprenticeships, ceremonies, practice, etc.) to preserve and transmit their knowledge”(Battiste & Henderson, 2000). Knowledge that is spread by word of mouth or cultural rituals, also becomes basis for agriculture, food preparation, health care, education, conservation and array of other activities that sustain societies across the world. People in most societies accumulated voluminous knowledge about soil, climate, water, forest, wildlife, minerals etc. in the locality over centuries through experiential interactions. They could sustain such knowledge skills so far but present generation who prefer to learning skills offered by modern educational institutions than traditional skills, from the conventional teachers (elders). They tend to question the cultural influences on the processes related to folk lore learning that transcended across generations and the ways of transferring the learning. In the absence of appropriate details on cause and effect they tend to contrast traditional knowledge with commercially oriented abstract knowledge its academic ways of learning. As a consequence, the communities and the country have to face a critical risk of losing much of this indigenous knowledge. Therefore it becomes imperative to tap and synchronise available indigenous knowledge with modern education appropriately and sustain the valuable traditional wisdom.

Need for preservation of indigenous knowledge

The World Development Report (World Bank, 1999) noted that knowledge, not capital, is the key to sustainable economic and social development. However, this valuable resource is scantly used by Governments, NGOs and Donors, despite their awareness of its role in sustainable development and peace building, Their recognition of indigenous knowledge often amounts to little more than lip service, seldom translating into action or funding (Gachanga, 2005). Though very little indigenous knowledge is found to have been captured and recorded for preservation, it represents an immensely valuable database that provides deeper insights on how numerous communities have interacted with their changing environments, including resources of flora and fauna. The knowledge is vulnerable to attrition if it is not recorded for storage and wider transmission (Sithole, 2007).

The communication of traditional knowledge is hampered by technology that teaches them non-indigenous ways and limits the capacity of elders to transfer traditional knowledge to the young in the form that is acceptable to them. As the elders die, the full richness of tradition is diminished, because of the loss of certain knowledge that could not be transferred. It is pertinent to preserve traditional knowledge using technology that helps in its easy as similation. Similarly the advent of building infrastructure, industry, and cultivation of invasive species lead to loss of habitats and of some valuable plants which become extinct. Consequently the knowledge about the plant could not be demonstrated and overall transfer of the knowledge to the next generation gets diminished. Other causes include urban gardening, wild foraging and over-picking of indigenous medicinal plants that needs to be checked for sustenance. Some losses can be mitigated if we use traditional knowledge to grow, preserve and use the medicinal plants. The efforts on identifying such plants and documenting their practical usage is part of subject‘ Ethnobotany’ which also covers Intellectual property rights and benefit-sharing arrangements that facilitate knowledge transfers that preclude bio-piracy.

Indigenous knowledge development through ICT

(Source:www.ethnosproject.org/information-and-communication...)

ICT-assisted indigenous knowledge development requires a number of integrated working approaches:

- Networking major institutions that have already begun to work on indigenous knowledge
- Study on the indigenous knowledge covering aspects such as IK asset at community levels, community structures and networks in support of indigenous knowledge systems and how information and communication technologies may enhance this.
- Research to map out social and cultural barriers to the flow of knowledge.
- Development of pilot interventions to learn how ICT impact on IK that in turn improve livelihoods. Present situation needs to put mechanisms for identifying, collecting, documenting, characterizing, recognizing and sharing of IK at national levels and establish the necessary organizational incentives and support systems.
- In addition there is a need for:
- Creating local/regional/national registers of innovations and indigenous knowledge
- Establishing mechanisms for rewarding innovators
- Developing intellectual property rights protection systems
- Stimulating the flow of indigenous knowledge in schools to increase awareness on innovation and traditional knowledge.

It is opined that linking people with relevant knowledge and each other directly is far useful than arranging top down knowledge flow from experts and merely accumulating knowledge in 'stores' or IK databases. (Lishan Adam, 2013).

Libraries and integration of social media and mobile technologies

(Source: ijoc.org/index.php/ijoc/article/viewFile/1667/1067)

The Digital libraries could act as custodians and moderators of the indigenous knowledge database and train community members on how to collect and document oral and visual materials based on community needs and facilitate information flow to social media or mobile technologies that could reach even remote audiences. Libraries also have a role to play in continually engaging with and mobilizing communities through participation in cultural events, social functions, exhibitions, craft workshops, fairs, and other activities that contribute to successful documentation and preservation of indigenous knowledge. The indigenous populations should be trained to use electronic media and mobile technologies to enhance their awareness levels about the use of the recorded knowledge by accessing relevant details and participating in the Blogs, chats etc. in the Social media sites via web. Social media such as YouTube, Facebook, Google Docs, and Twitter can be used to create, access, and share information or skills within social and geographic communities (Sylvia *et al*, 2014).

Indigenous People- Accessibility ofICTs

(Source-ijoc.org/index.php/ijoc/article/viewFile/1667/1067);
(www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/...)

The high rate of illiteracy (print-based) unavailability of indigenous knowledge from Western education add to the information gap. The threat of disappearance of traditional knowledge and skills due to memory loss or death of elders and the deliberate or inadvertent destruction of indigenous knowledge can be a challenge in preserving oral knowledge. Low-tech approach to IK can be the starting point in the absence of advanced technologies. Many Indigenous People distinctly disadvantaged with regard to access to and distribution of digital information or the skills-based capabilities required for effective utilization of ICTs (Samaras, 2005 and Helsper 2010). Further for some Indigenous People, ICTs represent a vulnerability to further colonization and a threat to the vitality of their cultures, languages and religions. There is also concern over a lack of protections for traditional knowledge, intellectual property, and collective guardianship (Kamira, 2002). More than being innovative and creative ICTs needs to build a level of trust with built-in protections and safeguards of rights of indigenous people, ensuring the full and effective participation of the communities involved in projects that affect them.

Intellectual property rights - control of misappropriation and exploitation of traditional knowledge

Natives possess both collective and individual traditional knowledge and also intellectual property rights to their traditional knowledge, even if much of it is yet to be written down. No one has the right to document or use traditional knowledge without their permission. Natives have the right to insist that what they shared need not be taken out of context or misrepresented. When traditional knowledge is cited by others, Natives also have the right to insist that the source of this knowledge be properly acknowledged. In other words, Natives have the rights to own and control access to their traditional knowledge. It is possible that some traditional knowledge may be specific to an individual in the community in that case the person will become the IP holder.

We need to look at 2 types of examples in this context. Knowledge about the diet consumed by Vedda community in Dambana Village, Sri Lanka was gathered by an American based on information obtained in a casual conversation with an aged native settled in America. Now he published a Recipe book "Vedda Blood sugar Remedy" and claims to be a therapist charging the patients for recipe book. How much of it goes to the benefit of community is unclear. Similarly in India the bone bandage at Puttur and Herbal medicine through fish for Asthma, at Hyderabad both are practiced by native communities are not revealed because of the feeling of loss due to biopiracy.

Studies and research carried out in Native communities and must be controlled locally duly considering: (Source: www.nativescience.org/html/traditional_knowledge.html)

- Needs and interests of Community will be served first, as the original contributions of local and traditional knowledge will have the potential to be realized.
- Traditional knowledge incorporates knowledge of ecosystem relationships and a code of ethics governing appropriate use of the environment. This code includes rules and conventions promoting desirable ecosystem relations, human-animal

interactions and even social relationships, since the latter continue to be established and reaffirmed through hunting and other activities on the land. Traditional knowledge articulates with non-traditional knowledge to form a rich and distinctive understanding of life and the world.

- Many Natives view the extraction of their traditional knowledge from its broader cultural context as a form of theft and have been reluctant to share the depth and breadth of what they know with outside interests. They also fear that, because many wildlife managers and decision-makers do not understand their culture, customs or values, their traditional knowledge will somehow be used against them (e.g. setting quotas and other hunting regulations). At best, piecemeal extraction of traditional knowledge from its larger cultural context invites misrepresentation and misinterpretation. At worst, it represents a form of misappropriation and cultural exploitation.
- Develop methods and timelines for taking draft information back to communities for review and feedback, which would be integrated into products/reports for local, regional and wider use.

Efforts on knowledge preservation in India

Source: Traditional Knowledge Digital Library website.

In 2001, the Government of India set up the Traditional Knowledge Digital Library (TKDL) as repository of 1200 formulations of various systems of Indian medicine, such as Ayurveda, Unani and Siddha and 1500 Yoga postures (asanas), translated into five languages-English, German, French, Spanish and Japanese (MOEF, 2010). India has also signed agreements with the European Patent Office (EPO), United Kingdom Intellectual Property Office (UKIPO) and the United States Patent and Trademark Office (USPTO) to prevent the grant of invalid patents by giving patent examiners at International Patent Office's access to the TKDL database for patent search and examination (CSIR, 2010 and MOHFW, 2010).

The National IPR Policy is a vision document that aims to create and exploit synergies between all forms of intellectual property (IP), concerned statute and agencies. It sets in place an institutional mechanism for implementation, monitoring and review.

A research council of AYUSH ministry has been implementing a Tribal Health Care Research Programme (THCRP) which aims at collecting information on folk medicines / traditional practices prevalent in different parts of the country besides extending health care and other services to tribal population.

Examples

Honey Bee Net work -Successful indigenous knowledge initiative in India

(Honey Bee Network. Available at: htt p://www.sristi .org/hbnew)
The Honey Bee Network in India is one of such initiatives aimed at gathering, organizing indigenous knowledge while recognizing, respecting and rewarding local creativity, traditional knowledge and contemporary grassroots innovation (Anil K Gupta, 2005). The network has documented more than 11000 outstanding examples of traditional knowledge and contemporary unaided innovations. Some of these have been taken up to set up as a venture for incubation and product development. Every six months the members of Honey Bee Network walk for eight to ten days from one village to another to scout for innovations, respect the knowledge experts at their doorstep and share the multi-media, multi language Honey Bee database of innovations with the local communities. Patents have also been filed through the grants under the Department of Scientific and Industrial Research and Department of Science and Technology. The benefits in the process have gone to innovators three to five times of their annual income. Experience of the Honey Bee Network shows that the value chain of innovations beginning from scouting, validating, value addition, product and enterprise development, intellectual property rights protection, licensing and dissemination requires a whole range of institutional support. A competition among women for demonstrating various recipes which use at least uncultivated plants helps identifying women food and nutrition experts whose knowledge is often discounted.

Indigenous knowledge -Useful sources of information in other areas of the Globe

(Source:www.sdnbd.org/sdi/.../indigenousnkowledge/indigenousknowledge_sustainability.pdf)

Bodies that document the studies of indigenous communities in the world include

- Centre for world indigenous studies, USA ;
- The Earth Council Indigenous Peoples' Project, USA ;
- CIRAN - The Centre for International Research and Advisory Networks for Indigenous Knowledge and Sustainable Development, Netherlands.
- Indigenous Education Worldwide - This Internet site lists materials, contacts, links and other resources related to the: Ainu of Japan, Maori of New Zealand, Aborigines of Australia, Native Hawaiians, First Nations of Canada, etc.
- Indigenous Knowledge and Development Monitor - A journal published by CIRAN on the role that indigenous knowledge can play in sustainable development. The Monitor is published three times a year.
- Indigenous Knowledge WorldWide (IKWW) is a newsletter with focus on Indigenous Knowledge (with a special attention to the relation with higher education).

UNESCO's (MOST) database of best practice on indigenous knowledge

(Source:www.ethnosproject.org/information-and-communication...)

The Centre for International Research and Advisory Networks (CIRAN) in cooperation with UNESCO's Management of Social Transformations Programme (MOST) jointly coordinate a database of best practice on Indigenous Knowledge. This site includes a definition of indigenous knowledge, a discussion of criteria for selecting 'best practice', and a registry of best practice that gives numerous detailed summaries of projects in

Africa, Asia, Europe and Latin America that have sought to improve conditions and alleviate poverty through the successful employment of indigenous knowledge.

The government of South Africa for example has developed a policy on indigenous knowledge systems that was adopted by its Cabinet in 2004. The policy among other addresses institutional frameworks for supporting indigenous knowledge systems, academic and applied research issues, systems for capturing indigenous knowledge, the promotion of networking among practitioners and legislations to protect intellectual property associated with indigenous knowledge. This policy provides a basis from which countries can draw on to develop their indigenous knowledge polices.

CONCLUSION

There has been growing interest in alternative forms of therapy globally. There are attempts by biomedical and Ayurvedic researchers to correlate Ayurvedic understanding of the nature of disease with modern biomedical concepts. The materia-medica of Ayurveda has attracted the attention of researchers and commercial concerns in India and abroad who are keen to identify the active molecules and produce medicines through traditional formulations. But collecting traditional knowledge requires lot of efforts as the persons owning the knowledge are reluctant to share it fully because of the loss of recognition etc. once the knowledge is parted. The article highlighted the issues connected with oral transition culture and alternative ways to sustain cultural heritage from likely extinction to benefit for both scientific world and tribal economy. There is crucial role for electronic and mobile technologies (cell phones) in creation, preservation, and dissemination of indigenous knowledge and storage of data in libraries. It is critical to ensure appropriate developmental programmes for natives through ICT during the integration of IK with other projects.

Significant efforts from some of our scholars (Vedavathy *et al*) of Tirupati region resulted in eliciting the response from the communities and collecting and preserving the knowledge through collaborative approach. It is important that these efforts are replicated and consolidated for the overall benefit of the society. The government organizations and research centres should maintain knowledge repositories of such crude drug preparations, to help conserving and preserving indigenous knowledge of the medicinal flora of our country by giving due credit and ownership to those who preserved and practised this knowledge for generations and took care of their denizens. Awareness should be increased among the students regarding indigenous knowledge and significance of medicinal plants in safe guarding and restoring overall health of the people of the nation. More comprehensive scientific explorations and research needs to be carried out to draw the complete picture of traditional use of indigenous plants of India that are present in Mega Biodiversity Hot Spots.

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