INDIGENOUS KNOWLEDGE AND PATENTS FOR SCIENTIFIC ACHIEVEMENTS

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Indigenous knowledge is generated by people through their day-to-day experiences when they face the challenges of nature and society. These challenges could be different problems in agriculture, biotechnology, biology, and medicine etc. This mass of knowledge evolved is unique to a society of a country. This is a resource to be preserved and the people who have generated this knowledge should be respected and rewarded. Most of this knowledge is embedded in various cultures in various forms such as cultural practices, customs and traditions. For an example, as the traditional system of indigenous medicine was based on herbal preparations, the knowledge was stored in prescriptions called "Beheth Wattoru". Different prescriptions were written for different diseases. This specific knowledge in medical treatments had been with native doctors (Veda mahaththaya) and has been transmitted from generation to generation to date. But very recently it has been reported that some scientists have taken these herbal prescriptions for laboratory analysis to find the chemical components and the reactions of this components with other substances . Ultimate aim of these chemical analysis is to develop chemical structures towards the manufacture of drugs suitable to various ailments.

The researcher and the associated drug companies receive patents for these achievements while neglecting the knowledge generated by native people. Then the question **of "who is the real owner of this national knowledge ?"** is raised.

If the drug is effective, it is true that the discovery of a new drug is a contribution to the development of the medical science. But this patenting system has taken all the intellectual rights of people who have provided the original knowledge that was used for synthesizing the drug. And also no reneumerations considering the value of their knowledge contributed on this development. At present, there are many evidences that chemical analysis are being carried out in laboratories locally and abroad towards synthesis of pharmaceuticals based on herbal prescriptions of native doctors in developing tropical countries.

Not only in medical sciences, but in the field of agriculture, local farmers had obtained great achievements in producing different varieties of rice, yams and vegetables, food crops etc. These verieties are genetic resources unique to a society and their efforts should be appreciated and rewarded.

In the context of biotechnology, the genes from plants, animals and minor organisms of the developing world in particular are the strategic raw material for the development of new food varieties, pharmaceuticals, and industrial products. But these genes are seldom raw material in the traditional sense because they have been selected and improved by our local farmers and people over thousand years. Therefore it is difficult to talk about

biotechnology, or agriculture without looking at the global level and without an appreciation for the interdependence of all nations and societies.

All major food crops, the staple crops grown and consumed by the vast majority of the world population have their origin in tropics, and sub tropics of Asia, Africa and North America. Over the past years developing world farmers selected and domesticated almost all the food crops on which humankind survive today

Fresh infusion of exotic germplasm are vital for the ongoing improvement of agriculture. Whether they are used in traditional farming system, commercial breeding of modern biotechnology and genetic resources are a global asset of high value now and in the future.

But I like to mention that the knowledge of farmers and indigenous people and their role in conserving and developing biodiversity has not been given due consideration. For example, in the past it is mentioned in Poojavaliya written in 10th century A.D. more than 200 rice varieties were cultivated in Sri Lanka. Robert Knox in his "An historical relation of the Island Ceylon has written that a number of rice varieties with different life span were used in Sri Lanka. These indicates that Genetic diversity, the variation of genes within species and the distinct population of the same species were known to the Sri Lankan farmer.

Even today, for example, the Ifugao of the Philippine Island of Luzon can name more than 200 varieties of sweet potato. Jivaro farmers in one Amazonian community grow over 100 varieties of manioc. In one Liberian village Kpelle women maintain over 112 varieties of rice. These plant genetic resources reflect the ingenuity, intellectuality and inventiveness of the local people. There is increasing recognition worldwide that the indigenous knowledge of thousands of human cultures is very important in utilizing and conserving biological diversity for agriculture and sustainable development.

But, unfortunately, cooperation to conserve bio diversity and its sustainable use has been jeopardized by the efforts of some industrialized countries to obtain monopoly control over genes, plants, animals and other living organisms including human genetic material.

With introduction of genetic engineering the biotechnology industry has successfully promoted the industrial patenting systems to all biological products and processes. The historical decision with regard to that is mentioned below.

In 1980, the U.S. Supreme Court ruled in the groundbreaking case of Diamond vs. Chakrabarty that genetically engineered microorganisms are patentable.

In 1985, the U.S. Patent Office ruled that plants could be patented under industrial laws.

In 1987, the U.S. Patent Office ruled that genetically engineered animals are also patentable.

As a result of these decisions, virtually all living organisms in the U.S. including human genetic material bécame patentable. Genes, plants, animals and micro organisms whether simply discovered in nature or manipulated by genetic engineers became the intellectual property of private interests.

The General Agreement on Tariffs and Trade and Trade related aspects of Intellectual Property Rights (GATT- TRIPS) will obligate

signatory states to adopt intellectual property laws covering both microbiological material and plant varieties. This has forced many developing nations to adopt plant intellectual property rights and in many cases these laws may be entirely inappropriate for some nations needs and level of development.

This has caused for farmers and consumers of the developing world to pay royalties on products which are produced on their own biotechnological resources and knowledge. Several examples to explain the situation are given below.

A) 'Thaumatin' is a super-sweet product derived from a West African plant. Genetic engineers from Lucky Biotechnology Corporation and the University of California recently received patents for any plants that are genetically engineered to express super-sweet natural protein derived from thaumatin. This plant grown in the humid tropical forests of West Africa where local people have used it for centuries as a sweetener and flavour enhancer. There is a high market for this low calory sweetener but West African local people will get nothing out of it and their indigenous finding about this plant which had come from generation to generation over a large period has not been appreciated.

B) Agracetus, Incorporation in US received a patent for all genetically engineered cotton varieties. That means transgenic cotton varieties cannot be commercially produced without payments to Agracetus not only in US but also in India, China, Brazil, Europe. The cotton was first planted and improved by farmers in Central and South America. The decision that Agracetus invented transgenic cotton is unjust. Modern plant breeders and genetic engineers are developing new species on the successful achievements of generations of local farmers.

Therefore, granting patents to cover genetically engineered varieties of a species has put in the hand of a single inventor the possibility to control what farmers could grow on their farms and gardens without ignoring how the genes were transferred.

C) In Sri Lanka, there have been more than 900 varieties of medicinal plants grown successfully which have different properties for different diseases. In recent times, extracts of several plants have been sent to chemical analysis and structure elucidation towards preparation of drugs. Based on this achievements USA has received patents for about 10 **Sri Lankan plants from which different chemicals derivatives and drugs have been produced. And Sri Lanka has lost the traditional ownership of the same**. This will cause Sri Lankan farmers, consumers, others to pay taxes on products which are produced by these plants. Students, teachers and general public should be aware of this situation before the problem becomes serious.

In this letter the author has tried to point out the magnitude of the indigenous knowledge which had been generated by local people in the areas of agriculture, biotechnology, medicine which have been used by the so called companies to produce plant varieties, foods and pharmaceuticals etc. But the problem of "How the real owner of this knowledge is to be rewarded" is raised.

However, legal recognition is necessary to be given to local people's intellectual property rights as it is timely important issue.

It is necessary to integrate indigenous knowledge and scientific knowledge, in the interest of sustainable development.The first requirement is to understand the interaction between farmers existing knowledge and the new information they need to deal with emerging problems. Therefore, Is it not worth to recognise the knowledge of both parties, farmers and scientists?

References:

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Farmers in ancient Ceylon stored their paddy harvest in a store called " Wee Bissa". Then damage to the harvest due to sunlight, rain and dew was prevented. Even today farmer uses " Wee Bissa" to store paddy harvests. But the technology behind this storing system is still unique although different storage methods have been developed in the world.