Indigenous Knowledge : An Overview and Case Reviews

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Introduction

When our ancestors systematically organized reservoirs and irrigation channels to cultivate lands; established human settlements; and retained the forest cover; they were skillfully managing water resources, and conserving the environment for posterity. When farmers cultivated different varieties of rice, recognizing their specific qualities on food value, palatability, and medicinal value, they were not only sustainably drawing the gifts of nature, but were also conserving a priceless biodiversity. When multi-tiered farming systems were raised for food, medicine, fuel and fodder in homesteads, they were conserving germplasm *in situ*, and simulating a natural forest cover. The sons and daughters of this small island of Sri Lanka, are the proud inheritors of this unique culture and wealth of traditional wisdom that evolved, survived or perpetuated generation after generation by a process of observation, enrichment and refinement, and validated by test of time.

Despite relegated, a vast body of knowledge remained intact with traditional communities, communicated orally or written down in ancient text (e.g. *Susrutha*), or stated in cryptic form and transmitted in practical situations through apprenticeship. It is this wisdom that nations world over are looking forward today for solace and guidance for a harmonious living environment.

The Global Context

• The World Intellectual Property Organization (WIPO), recognizes Traditional Knowledge as tradition-based literary, artistic or scientific works; performances; inventions; scientific discoveries; designs; marks; names and symbols; undiscovered information; and all other tradition-based innovations and creations resulting from intellectual activity in scientific , literary or artistic fields

• Article 8j of the Convention on Biological Diversity describes TK as knowledge, innovations and practices of indigenous communities around the world, particularly in fields of agriculture, fisheries, health, horticulture, and forestry.

• About 45 years ago organizations such the World Health Organization (WHO) took the initiative to study the resourcefulness and impact of traditional medicine in primary healthcare. Recognizing that TK can be codified, regulated, taught and practiced. WHO defined Traditional Medicine as including "diverse health practices, approaches, knowledge and beliefs, incorporating plant, animal and/or mineral based medicines, spiritual therapies, manual

techniques and exercises applied singularly or in combination to maintain wellbeing, to treat, diagnose or prevent illness".

Characteristics of Traditional Wisdom

The basic features of TK are, 1) Traditional Knowledge is the result of man's interaction with the environment to fulfill the needs of society, 2) The emphasis of TK has been mainly on natural resource management, agriculture, climate and water, food security, technology, genetic resources and ecosystems. 3) Traditional Knowledge sets out the framework for governing the use of resources. This knowledge accepts, recognizes, and respects nature, 4) Traditional Knowledge in most cases is not considered an individual's private property. In such instances property rights over TK are vested with a larger group that spreads beyond the present individual or groups. 5) Traditional Knowledge is not documented as in modern scientific writing. It is often transmitted through verbal forms, or is written in cryptic form that requires a specialized set of skills to decipher, and 6) Use of TK knowledge also carries with it the ethical obligations that its origins may carry.

Case Reviews: A Cost Effective Indigenous Method for Paddy Cultivation

A refined system of paddy cultivation referred to as "*Nawa Kekulama*" was practiced by about 100 farmers in the villages of Villachchi and Galnewa in the North-Central Province. A characteristic feature of it was the technique of ground preparation with zero tillage. The weeds were slashed and removed from the "*liyadda*", but the "*niyara*" (bunds)

remained untouched. The paddy seeds were then dry-sown over the stubble, and then covered with a 3-inch thick mat of dry-paddy straw.

Where irrigation water was provided, an auspicious time and date were determined in consultation with local irrigation authorities. For rain-fed areas the time was determined through astrological considerations. In either case spiritual exercises and pirith ceremonies were conducted either by priests in the village temple, or by lay elders.

Among the rituals was the use of a new mammoty to cut the first sod (*archarya pidella*), and depositing it in the lowermost field (*liyadda*), the offering of alms to fellow villagers, and determination of the system of shared labour.

With the first showers, or the first release of irrigation waters, the paddy seeds germinate and sprout above the mulch of paddy straw. Interestingly, even without any standing water, paddy plants were well established with no weed growth. Farmers were aware that sprouts of paddy plants unlike those of many other plants (weeds) grow as pointed shoots which can penetrate the bed of straw and grow without being hampered by weeds which do not have this capability. These farmers did not use any agro-chemicals, and with low-cost land preparation, the profitability was exceptionally high, although average yields per hectare were about 20 to 30 percent less, than with modern techniques.

Nawa Kekulama also has a novel system of pest management. According to these farmers, insect pests that are known to attack paddy plants, do so because there are no other plant material available for their survival. The paddy plant according to them is the least important source of food for survival of pests. Thus when the bunds or "*niyara*" are left untouched and wild, the insects tend to live on the plants

or weeds standing on the *niyara*, without unduly concerned about the paddy plant. By this means pest infestations were minimized.

However, these farmers also employed spiritual and other techniques. For instance, one pious farmer said that he picks up a few of the known insect pests, and recites a series of pirith stanza several times at a time before releasing them alive. He claimed that such pests did not return to his field again. As evidence he showed the difference between his paddy plants and the plants in another nearby paddy field, which had been severely affected by pests.

Another technique was the use of pest repellent plant material. In the Uva Province, farmers depending on ecological farming, prepared a crude paste by crushing the leaves of Neam and a plant called *Mahapatta*, wrapping it in a piece of cloth, and placing the pack near the water inlet to the paddy field (*Wakkade*). This approach apparently serves as a pest repellent.

Indigenous Pest Control Measures for Vegetable Cultivation

Farmers engaged in ecological farming in the villages of Lunuwatte, Rahupola/ Thiyapola in Uva–Paranagama and Moneragala areas (Badulla District), resorted to rotational cropping.

The sequence in rotational cropping was common to both traditional farmers, and those who resorted to modern techniques. Typically paddy cultivation was followed by a vegetable crop such as beans, which is susceptible to insect pest infestation. Farmers practicing indigenous systems employed one or two of several simple organic treatments to repel insect pests. One common method was to dust the plants

with kitchen ash at dawn when plants were wet with dew. Another approach was to spray plants with a suspension of cattle dung in water.

Another technique was the use of crushed leaves and bark of the plant commonly known as "*mahapatta*", combined with the crushed leaves of Neam and a plant known as "*gora*". This mixture of crushed plant material was shaken with water in a large bottle and kept aside in the field for several days for "maturation". The maturation process according to these farmers, take place with dew-fall. The matured water suspension was then sprayed over the bean plants. The effectiveness of this pest control measure was quite evident in the vegetable plots of these villages.

An Integrated Crop-livestock Farming System

The use of the buffalo as a multipurpose animal has been a traditional farming approach. Though the common use of buffalo was in draught power for ploughing and threshing, it was also used in weed control and fertilizer production. It has been known for generations that noxious weeds such as *Illuk* in coconut plantations, can best be controlled by buffalo grazing.

It has been a tradition to tether a pair of buffaloes for 10 nights to fertilize each coconut tree. This has been done even in large coconut estates, where buffaloes. were kept primarily for paddy land preparation, and secondarily for weed control.

A field experiment conducted at the Coconut Research Institute (CRI), Lunuwila, more than 50 years ago to compare the efficacy of the traditional system of organic fertilizer application with modern application of chemical fertilizers, established the fact that the quantities of buffalo dung and urine produced by a pair of buffalo heads tethered for 10 nights to a tree, provided nitrogen and phosphate nutrients in

proportionate quantities adequate for two years. However, potassium an important major nutrient for coconut was grossly inadequate. But by tradition, farmers also used kitchen ash as a supplementary fertilizer for coconut palms. It had been the age old practice to spread a 4 – gallon "oil can" full of kitchen ash round the base of the coconut palm as a supplementary fertilizer. Though the composition of kitchen ash varied, the common use of dried coconut husks (containing as much as 25 percent K_2O) as a fuel, in the traditional kitchen hearth enriched the ash with adequate amounts of potassium.

The conviction of the traditional farmer was that the amount of nutrients so supplied per palm by buffalo excretions and kitchen ash was adequate for 2 years. Significantly, the quantities and proportions of NPK in this combination of organic fertilizers were found to be comparable with the quantities and proportions of major nutrients (NPK) recommended by CRI for adult palms using chemical fertilizers. Thus this traditional system of organic farming became an official recommendation of CRI in the early 1960's.

The Fading Socio-cultural Traditions of Childbirth in Rural Sri Lanka

This review is based on a presentation by R.S.H. Premkumar at a Symposium on TK in 1994, titled 'Traditional Midwifery', which depicts the fading socio-cultural traditions of childbirth in a rural society.

The central figure in this event is the "midwife", who although without formal training in the art of assisting child birth, is very well versed in its socio-cultural and procedural aspects, learnt through an apprenticeship, and through ones own personal experiences. An important feature of the midwife is the recognition and faith placed on her by the community at large in performing an onerous task, which in the modern society is performed by a highly qualified and skilled team of doctors, nurses and attendants. The traditional role of the midwife begins at an advanced stage of pregnancy, with preliminary preparations to receive the newcomer. The initial step is to sweep the improvised labour room and sprinkle turmeric (*Curuma domestica*) in the powder form or as a suspension. Although this is considered a ritual to repel 'evil spirits', in practice it disinfects the room.

She applies gently oil prepared from margosa (*Azadirachta indica*), gingelly (*Sasamum indicum*) and castor oil (*Ricinus communis*), from loins towards the epigastria. This substance is believed to give more flexibility and elasticity to muscles permitting easier contraction. Sometimes she may administer a little snuff to induce sneezing that helps to push the baby out. At the time of delivery, assisted by a few other women, several postures and positions are adopted according to the frame of the pregnant mother's body.

The placenta is severed with a sharp knife, usually the tea-pruning knife (or sometimes a pair of scissors), that had been previously treated with turmeric water and held over incense. This activity though ritualistic in the Hindu tradition, since it represents a plea for blessings of *Brahma* (the creator), *Vishnu* (the protector) and *Shiva* (the destroyer), is also a process of sterilization. The wound is then dressed with a medication made from the ash of the dung of a calf, mixed with pepper (*Piper nigrum*) and a herb known as "*vasambu*" (*Acorus calamus*). Castor oil is given to drink after the ejection of the placenta, which is then burnt outside the entrance to the house. A stone placed on top of the placenta is wrapped round with a rope to which mango and margosa leaves are clipped. This ritual is believed to

prevent evil spirits (inclusive of germs and bacteria) from entering the house. It is also symbolic, to the extent that anyone seeing this object would not enter the house, thereby ensuring hygiene and sanitation to mother and baby. This symbol is retained for 30 days, during which period the midwife assisted by older women would attend to the baby and the lactating mother.

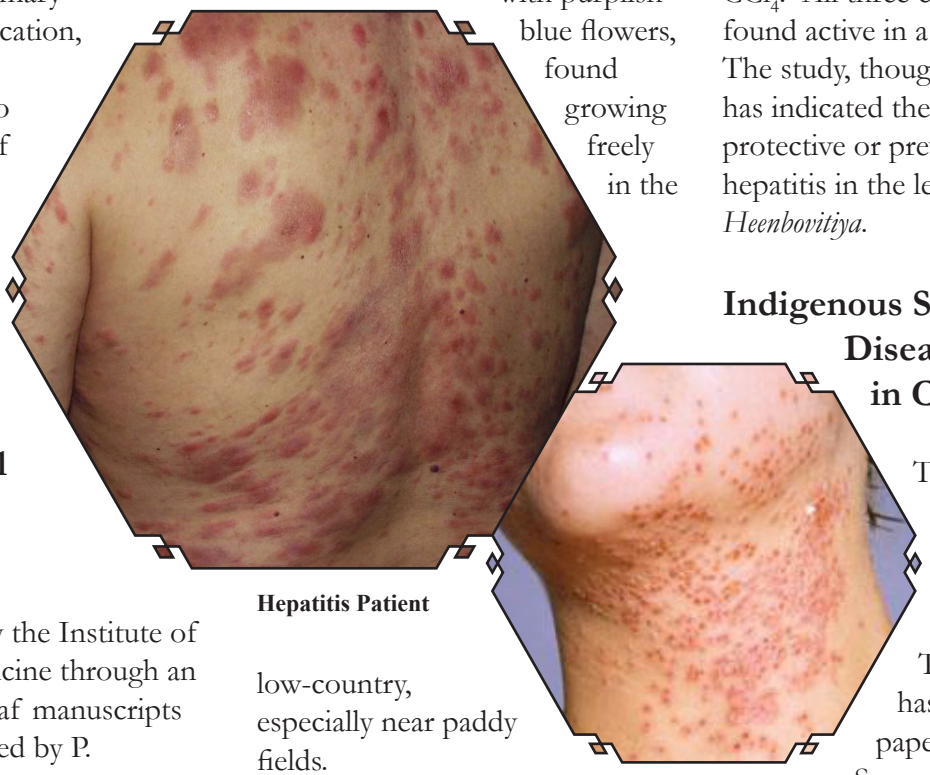
Finally there is the month-long aftercare, which is even a more exacting programme of diet management, primary healthcare, purification, and ritualistic or spiritual events to mark the entry of the mother and the newborn to the community hold.

Ingenuity in Traditional Treatment of Hepatitis

Work initiated by the Institute of Indigenous Medicine through an analysis of ola leaf manuscripts has been described by P. Serasinghe in a paper presented at a Symposium on IK in 1994.

In 158 such manuscripts studied, eight plant species had been identified as being used as single drugs for the treatment of hepatitis, referred to in this literature as "*Kamala*". This ailment is also called "*Sengamala*", or "*Kaha Una*". Hepatitis or *Kamala*, is a viral infection of the liver causing hepatic necrosis of varying degrees. Modern treatment usually involves bed rest, intake of fluids, glucose, vitamin B and dietary measures.

The indigenous system of medicine, largely involves intake of a rice-based herbal porridge (*Cunge* or *Kola kenda*) for which *Osbeckia octandra* leaf is the commonest ingredient. *Osbeckia octandra*, locally known as "*Heenbovitiya*" is a small shrub with purplish-blue flowers, found growing freely in the low-country, especially near paddy fields.



Hepatitis Patient

However, a research grant awarded by Natural Resources, Energy and Science Authority (NARESA) to a team of researchers led by C. Pathirana of Ruhuna University in 1986, for a project titled "Studies of Medicinal Plants in Southern Sri Lanka", involved a chemical examination of six herbs that included *Heenbovitiya*. In this study sequential methonolic extraction of *Osbeckia octandra* leaves was done followed by chemical screening of extracts. Three compounds were identified in the extracts of which one was a mixture of three flavonoids. The products from active extracts were used for antihepatotoxic activity and liver dysfunction assessment in male albino rats of *Sprague Dawley* strain, whose liver damage was induced with an injection of CCl_4. All three compounds were found active in a preventive sense. The study, though inconclusive, has indicated the presence of a protective or preventive agent for hepatitis in the leaf extracts of *Heenbovitiya*.

Indigenous Systems in Disease Diagnosis in Cattle

Through the examination of a 150-year-old ola leaf manuscript, T.N. Jayatilake has described in a paper presented at a Symposium on IK in 1994, an indigenous system of disease diagnosis and treatment of diseases in cattle.

An important aspect of this treatment philosophy is the classification of cattle into a system of breeds referred to as "*Gothra*", which is the preliminary

step. The correct identification of the '*gothra*' apparently gives an indication of susceptibility to particular types of diseases.

Disease identification is by an in-depth clinical experience, comprising visual observations and the time-tested system of indigenous knowledge. Skills in diagnosis and treatment are based on careful observation of sick animals, using investigations such as behaviour, pulse rate, respiration, dryness of the muzzle, rumination, defecation, urination, movement and posture of ears, changes and reddening of the eye, movements of the eye ball, tearing, nasal discharges, gestation, lactates etc. The diseases are diagnosed in relation to the site of origin, such as the diseases of head (nervous conditions,) ear (*kannal*), intestines (*veppu*), blood vascular, and respiratory (*adappan*).

An important aspect of the treatment regime used by these physicians is the incorporation of biophysical and spiritual aspects of medication. The spiritual medication is reported by Jayatilake as an advanced system of treatment of epidemiological significance, and known to have a visible impact in bringing about an immediate cure, or prevention of the entry, or spread of contagious diseases. Subjecting animals for spiritual medications and/or casting spells for immobilization are specialized aspects that are not fully understood. It is also a traditional practice to perform rituals annually in various parts of the country to bless livestock herds, and thereby prevent the entry and spread of contagious diseases. An example quoted by Jayatillake is the so-called "*Mangara*" ritual for buffaloes practiced in the Moneragala District. In addition animals are guarded against evil spirits using "*yanthra*", "*manthra*" and "*kem*".

Ancestral Cloth and Garment Industry

Cotton had been grown in ancient times as chena cultivation in the highland areas. It had been a major trading material from the hill country to Anuradhapura. The cotton picked from the chena lands were dried and cleaned in homesteads. The seeds were removed by passing the cotton between bars in the cotton gin. The threads suitable for spinning were then prepared by beating the cotton with a bar, and winnowing and rolling. Cotton was spun by women who gathered in large numbers to spin while they sang songs selected from Jathaka Stories.

Weaving machines used in Sri Lanka

The weaving machines and techniques were said to be similar to those found in India and Burma. The loom referred to as the "*Aluva*" was fitted in a loom house (*alge*), which was an open shed. In weaving the fabric, alternate threads are selected from the warp by the shuttle ropes, when the shuttle moves either way. The motion is imparted to the loom by treadle.

The garments woven in ancient times were not made by the present process of designing, cutting and stitching, but were woven on the batten as a complete item of cloth or dress. Hence the cloth and garments were of various sizes, shapes and designs. In this manner a variety of garments for men, women and chieftains, and other items such as towels, napkins, shawls, handkerchiefs, bedspreads, etc. were woven. It is significant that the size and design of the garments made were determined by the caste of the wearer (Lakdusinghe, 1999, *Vidurava*, 19 (1), pp 20-25).

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