

REVIEW

TRADITIONAL BHUTANESE MEDICINE (*gSo-ba Rig-pa*): AN INTEGRATED PART OF THE FORMAL HEALTH CARE SERVICES

Phurpa Wangchuk¹, Dorji Wangchuk¹ and Jens Aagaard-Hansen²

¹Pharmaceutical and Research Unit, Institute of Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan; ²DBL - Institute for Health Research and Development, Denmark

Abstract. Traditional medicine in Bhutan is known as *gSo-ba Rig-pa* and is one of the oldest surviving medical traditions in the world. Other medical systems, such as Chinese medicine, Indian Ayurvedic medicine, Unani medicine, Greco-Roman medicine and the country's rich cultures and traditions have greatly influenced the way traditional Bhutanese medicine evolved. However, Buddhist philosophy remains the mainstream of this medical system. *gSo-ba Rig-pa*'s principles are based on the perception the human body is composed of three main elements: *rLung* ('Air'), *mKhris-pa* ('Bile') and *Bad-kan* ('Phlegm'). When these three elements are balanced in the body a person is said to be healthy. The pathophysiology is also different from other medical systems, and the close link to Buddhism is reflected in the spiritual dimensions and the perception that all suffering is caused by ignorance. The treatment of diseases includes behavioral modification, physiotherapy, herbal medicines, minor surgery and spiritual healing. This makes the traditional Bhutanese medicine a unique and holistic health care system. The traditional medicine is an integrated and recognized part of the formal health care services in Bhutan under the auspices of the Ministry of Health. The article highlights three main points which can be learned from the Bhutanese experience: 1) the strong tradition of herbal medicines within *gSo-ba Rig-pa* forms a unique opportunity to prospect for new leads for development of pharmaceuticals, 2) the availability of the traditional medicine along with biomedicine broadens the health care choices for patients, and 3) the experiences of integrating two conceptually very different health care systems within one ministry contains important managerial lessons to be learned.

INTRODUCTION

One of the most remarkable of all ancient inventions was the art of utilizing natural medicinal products for treating various ailments, which today are broadly classified as traditional or alternative medicine. Over the centu-

ries, some ethno-medical knowledge either became extinct or alienated. However, the majority of traditional medicines are deeply rooted in many cultures and traditions of the world. Parallel to modern biomedicine, traditional medicine provides primary health care to 65-85% of the world's population (Kinghorn and Baladrin, 1993; Merrillyn, 1999; Bright, 2002) in developing as well as developed nations.

In Bhutan, the traditional medical system contains more than one thousand herbal formularies and recipes (Dorji and Morrisco, 1989) and ninety-eight of them have been se-

Correspondence: Mr Phurpa Wangchuk, Research and Development, Pharmaceutical and Research Unit, Institute for Traditional Medicine Services, Ministry of Health, Thimphu, Bhutan.
Tel: +975 2 325731; Fax: +975 2 324215
Email: phurpaw@yahoo.com

lected as the essential traditional medicines. These ninety-eight products can only be prescribed by trained traditional physicians. This article gives an overview of the philosophies, principles and medical paradigms of traditional Bhutanese medicine. This article also addresses the role of traditional medicine in an integrated health care delivery system in Bhutan and its potential with regard to bio-prospecting, improved health care services and managerial aspects.

ORIGIN AND DEVELOPMENT OF *gSO-BA RIG-PA*

The term *gSo-ba Rig-pa* consists of two words, *gSo-ba* which means to heal, feed, nourish, correct, and *Rig-pa* which means science, knowledge, perception or erudition (Semichov, 1981). Thus, *gSo-ba Rig-pa*, means "the science of nourishment". This medical system has been an inextricable part of the Bhutanese health care tradition for generations.

Some sources state that Buddha Kasyapa, predecessor of the historical Sakyamuni Buddha transmitted the medical teachings to Brahma who imparted the knowledge to his divine disciples through whom it gradually reached the human realm (Angele, 1984). Buddha Sakyamuni, also called the "Supreme Physician", was then said to have taught healing system; such as "*Vimalagotra*" (immaculate lineage), *gSo-dPyad hBum-pa* (one hundred thousands verses of healing), *Dul-ba rLung* (Vinaya Sastra) and *gSer-od Dam-pai mDo* (supreme golden rays sutra) that contain a separate chapter on *Nad-thams Cad-bzhi-bar bYed-pai rGyud* (the ways of completely curing diseases) (Men-tsee-khang, 2002). The historical Buddha is believed to have taught medicine simultaneously with the teachings of the Buddhist religion mostly using disease and healing as metaphors to illustrate his philosophy of the human condition.

Though Buddhist religious teachings

spread to many Asian countries, *gSo-ba Rig-pa* became prominent only in Tibet and Bhutan. It was in 718-785 A.D. that Tibet saw the peak development of astrology, medicine and astronomical science (Dagtho, 2003). During that time, Tibet hosted several medical conferences at Samye inviting great healers from Tibet, China, India, Persia, Byzantium and Himalayan countries like Bhutan and Nepal to attend (Anonymous, 2000). It was reported that all the different medical systems were analyzed at these conferences and the best practices were incorporated into *gSo-ba Rig-pa*. Later in Tibet, Yuthog "the Younger" who lived in the eleventh century, made a notable contribution in spreading the celebrated *rGyud-bzhi* (four medical tantras) and its commentary the *Vaidurya Ngon-po* (ITMS, 2005).

There were many years of intellectual and academic exchanges between Tibet and Bhutan. While some sources noted that *gSo-ba Rig-pa* in Bhutan took shape with the advent of Mahayana Buddhism from Tibet in the 8th century (Dompnier, 1998), other sources stated that *gSo-ba Rig-pa* developed subsequently in Tibet and Bhutan during the coming in of the great Buddhist saint, Guru Padma Sambhava, from India in the 8th century. However, the information is sketchy and the historical data has not been verified. Only in 1616, during the reign of Shabdrung Ngawang Namgyal, Tenzing Drukgyal, who was a Minister of Religion and an esteemed physician, started spreading the teaching of *gSo-ba Rig-pa* in Bhutan (Dorji and Morrisco, 1989). Bhutan saw the peak development of *gSo-ba Rig-pa* in the 17th century. A later record shows that *gSo-ba Rig-pa* was greatly supported especially after 1885 when the *Poenlops* and *Dzongpoens* (secular leaders) and the *Desis* (religious leaders) patronized the profession (Dharmananda, 2002). It is said that their courts privately employed or kept at least one or two esteemed physicians. Their successive rulers had many personal physicians.

Drungtsho Pemba was the personal physician to the first King, His Majesty Ugyen Wangchuk, and *Drungtsho* Penjor and Mahaguru served at the court of the second King. In 1967, during the reign of the third King, Jigme Dorji Wangchuk, Traditional medicine was included in the National Health System of Bhutan. In 1968, a dispensary was opened in Thimphu (capital of Bhutan) and in 1971, formal training for *Drungtshos* (traditional doctors) and *sMenpas* (traditional compounders) was initiated in Bhutan, providing a solid professional base for *gSo-ba Rig-pa*.

FUNDAMENTAL PRINCIPLES OF *gSO-BA RIG-PA*

Fundamentally, *gSo-ba Rig-pa* states that human beings are composed of three main elements called the "Three Humors"; *rLung* (Air), *mKhris-pa* (Bile) and *Bad-kan* (Phlegm) (Tokar, 1998). They are interrelated in all the vital systems and functions of the body, such as the nervous system, circulatory system, digestive system, excretory system, reproductive system, respiratory system and musculo-

skeletal system. Each of the three humors has different functions in the body (Table 1).

PATHO-PHYSIOLOGY

gSo-ba Rig-pa is based on the Buddhist belief that all suffering is caused by ignorance of the nature of reality and the craving, attachment, and grasping that arise from such ignorance. In *gSo-ba Rig-pa*, each of the three humors of the human body is considered a combination of the five basic constituents (proto-elements) of the Universe: *Sa* (Earth), *Chu* (Water), *Mei* (Fire), *rLung* (Air) and *Nam-mKha* (Space) (Men-tsee-khang, 2002).

They are essential elements for the existence of all life on earth and they coexist in equilibrium. As long as these proto-elements are in their natural state and maintain a proper balance, suffering does not erupt from the environment nor do they affect the three humors. When these three humors are balanced in an individual, then the person is said to be healthy. Any sign of imbalance or modifications in the three humors are apparent in the pulse, urine and on the surface of the body.

Table 1
The three humors and body function (Men-tsee-khang, 2002).

Humors	Characteristics	Functions
<i>rLung</i> (Air)	Has the nature of air: rough, light, cold, subtle, hard and mobile	Controls movement and bodily functions such as respiration, excretion, circulation, speech, intellect and impulses. Gives clarity to sense organs and sustains life by means of acting as a medium between mind and body.
<i>mKhris-pa</i> (Bile)	Has the nature of fire: purgative, oily, fluid, hot, sharp, light and fetid	Controls digestion, assimilation and basic metabolism generating heat and energy. Stimulates feelings of hunger and thirst. Gives luster to body complexion and provides courage and determination.
<i>Bad-kan</i> (Phlegm)	Has the nature of cold: oily, cool, heavy, blunt, smooth, firm and sticky	Gives firmness of body, stability of mind, induces sleep, connects body joints, generates tolerance, lubricates the body and regulates the balance of energies.

Based on this theory, physicians perform pulse readings, physical urine-analysis and observe the eyes, tongue and earlobes (in babies) to detect disorders. In modern allopathic medicine, the pulse is only used to detect anomalies of the heart and the circulatory system, but in *gSo-ba Rig-pa*, the pulse reading links the network of body meridians and can detect any diseases affecting different parts, organs and systems of the body (Dompnier, 1998). Body meridians also aid in diagnosing diseases related to the "energy system" of the body and guide acupressure therapy. Thus *gSo-ba Rig-pa* is more than the study of anatomy, patho-physiology and pharmacopia.

TREATMENT

The treatment regimen in *gSo-ba Rig-pa* includes five kinds of healing methods: behavioral modification, physiotherapy, herbal medicines, minor surgery and spiritual healing. The behavioral and lifestyle changes include diet modification, such as recommending nutritious food, advising to abstain from bad habits like smoking and alcoholism, recommending adequate sleep and physical exercise.

Physiotherapy involves acupressure and herbal therapy. While acupressure mainly includes golden and silver needle therapy, herbal therapy includes herbal baths, herbal steaming, nasal irrigation, and medicinal water baths. Medicinal water baths involve taking a bath in hot springs and other sulphurated or iron containing waters. Only those patients who suffer from skin diseases, arthritis, old age syndromes, paralysis, venereal diseases or urinary tract infections are advised to undergo this treatment.

Unlike western medicine, prescription of herbal medicines and surgery are the last resorts of treatment. The herbal medicines are multi-ingredient compounds and can be used for various purposes. Some herbal compounds contain toxic ingredients. Physicians

prefer to use them judiciously. Presently, minor surgery is almost never practiced in Bhutan, simply because the western surgical methods are more efficient.

Spiritual healing includes meditation and other faith related practices and is currently applied in mental health care in Bhutan.

RECENT TRENDS IN TRADITIONAL MEDICINE AND THEIR PUBLIC HEALTH IMPACT

During the past few decades, traditional medicine has undergone profound changes from a single indigenous dispensary in 1968 to a professionally managed, complex organization. The dispensary in Thimphu was upgraded to become a National Indigenous Hospital in 1979 and was renamed as the National Institute of Traditional Medicine (NITM) in 1988. In 1990 the Research and Quality Control Laboratory was established. To meet increasing demands, the NITM was upgraded to the Institute of Traditional Medicine Services (ITMS) in 1998 with three divisions: National Institute of Traditional Medicine (NITM), National Traditional Medicine Hospital (NTMH) and Pharmaceutical and Research Unit (PRU).

The NITM looks after human resource development and trains *Drungtshos*, *sMenpas*, research assistants, research technicians and pharmacy technicians. The course duration for obtaining a bachelor degree in traditional medicine (*Drungtsho* level) is five years and that of a *sMenpa* or research assistant is three years (diploma level). Research and pharmacy technicians are trained for two years (certificate level). This institute also conducts refresher courses and other in-service training for *Drungtshos* and *sMenpas* from time to time. Since its inception, the NITM has trained thirty-six *Drungtshos*, forty-three *sMenpas*, five research assistants, six research technicians and twelve pharmacy technicians (ITMS, 2005).

The theoretical session of the training component is backed up by one year compulsory practically oriented attachment to the National Traditional Medicine Hospital which is located at the same place solely for this reason. For *Drungtshos*, it is a pre-requisite to complete three months internship at a Traditional Unit in one of the district hospitals before taking up a full time job as a *Drungtsho*. In order to enhance capacity development and quality medical services, NITM is affiliated with the Royal University of Bhutan (RUB) and follows the university curriculum in relation to academic requirements. As traditional medicine is becoming more popular, the government has decided to establish Traditional Medicine Units in all Basic Health Units (BHUs) in the country which will ultimately lead to increased numbers of students in the years to come.

The NTMH in Thimphu and District Traditional Medicine Units are responsible for the provision of traditional medical services. The Traditional Medicine Units are housed under the same roof as modern hospitals for mutual consultation, treatment and cross referral in view of the integration policies of the government. The NTMH in Thimphu alone treats more than 30,000 patients annually and the district Traditional Medicine Units treat about 20-30% of the total daily OPD patients of the district hospitals (ITMS, 2005).

Although all kinds of diseases are treated by traditional hospitals, the treatment regimens are said to be more effective against chronic diseases, such as backache, migraine, sinusitis, arthritis, asthma, rheumatism, liver problems, paralysis and old age syndromes. The treatment methods at the NTMH include herbal therapy, herbal bath and herbal steaming. Localized herbal steaming is gaining popularity among the Bhutanese.

The *Drungtshos* refer patients with acute diseases such as injury, viral fevers, and appendicitis, to biomedical doctors, and they

refer patients requiring traditional medical treatments to the *Drungtshos*. Some patients seeking combined methods of treatment (modern and traditional) are handled jointly by the biomedical doctors and *Drungtshos*. Mental health is one such area, where the potential benefits of integration are being explored by the Ministry of Health in Bhutan. Research on determining the most effective parameters of integration is being initiated by ITMS in Thimphu.

The PRU manufactures traditional medicines and conducts research and development including botanical and pharmacognostical studies, phytochemical and clinical studies and standardization of the formularies and raw materials leading to product development. Thus, PRU has diverged into a truly cross-disciplinary field encompassing ethno-medicine, anthropology, botany, pharmacognosy, phytochemistry and pharmaceutical sciences. The PRU has studied some medicinal plants used in *gSo-ba Rig-pa* formulations and has revealed their efficacies from a chemical perspective. For example, the phyto-chemical study of two plants carried out by Phurpa Wangchuk in 2004 proved, for the first time at the molecular level, that two plants which are used in *gSo-ba Rig-pa* formulations for treating blood infections, high fever and malaria do possess anti-malarial characteristics.

Since 1998, the standardization of traditional medicines has been done using the Total Quality Profiling Method (Europe World, 2003). Since then, the finished herbal products and the raw materials are subjected to rigorous quality control procedures. Each formulation, each batch of raw material and the finished product are scientifically standardized and critically examined. Out of more than one thousand formulations which exist in the *gSo-ba Rig-pa*, only 98 were selected for the national essential drugs list (PRU, 1995) based on the prevalent disease patterns and trends in the country. These 98 formulations use 300

different types of ingredients and almost 70% of the raw materials are available within the country (Bagozzi, 2002). Using those 300 raw materials, the PRU produces 15 tons of quality controlled traditional medicines annually formulated into different dosage forms like pills (40%), tablets (30%), ointments (4%), syrups (2%), capsules (13%), powders (4%), crude extracts (1%) and un-established dosage forms (6%) (ITMS, 2001). To improve the quality of raw material, a drying unit was constructed in two traditional collection sites, Trongsa for low altitude and Lingzhi for high altitude medicinal plants. To preserve and promote traditional medicine and to cultivate and perpetuate a sustainable harvest of useful medicinal plant species, medicinal plant gardens were also established in some selected districts, including Soe, Lingzhi, Barshong under Thimphu District and Lingmithang in Mongar. This is expected to enhance the production of herbal medicine, preserve threatened species and encourage bio-prospecting of medicinal plants.

CONCLUSION

The traditional medical system in Bhutan is one of the oldest surviving medical traditions in the world. Combining a patho-physiological rationale of balance between three humors, with the meridians of acupressure and a strong Buddhist spiritual influence with therapeutic remedies, such as behavioral modification, physiotherapy, herbal medicines, spiritual healing and minor surgery, it provides a rich health care resource. As other countries grapple with policy issues related to integrating complementary medicine into national health services, Bhutan has addressed these issues where traditional medicine has been formally recognized as an integrated part of the governmental health care system since 1967.

This integration of traditional and biomedical systems offers unique opportunities and lessons to be learned. First, the strong

tradition of herbal remedies within *gSo-ba Rig-pa* forms a unique opportunity for development of drugs. The Bhutanese flora is characterized by outstanding biodiversity and a large number of endemic species, many of which form part of the *gSo-ba Rig-pa* pharmacopia. It is worthwhile to explore and extract that rich ethno-botanical information to aid and guide modern drug discovery programs in the right direction. Many medicinal plants, such as *Aquilaria agallocha*, *Rauwolfia serpentina*, *Ephedra gerardina*, *Taxus baccata*, *Rheum nobile*, *Rheum acuminata*, *Picrorhiza kurroa*, *Nardostachys jatamansi*, *Aconitum* species, *Artemisia* species, *Panax pseudo-ginseng* sub-species *himalaicus* and *Cordyceps sinensis* are in high demand as pharmaceuticals and have a potential international market value. Commercializing these medicinal plants would not only accelerate Bhutan's economic growth, but also contribute to the global stock of pharmaceuticals.

Second, the availability of traditional medicines along with biomedicine broadens the health care choices of patients. The fact that the Royal Government of Bhutan provides traditional medical services at the central level and at some basic health units, gives the patients a choice of therapeutic alternatives and more holistic health care. Future research needs to evaluate the advantages and efficacy of the two systems.

Third, the experiences of integrating two conceptually very different health care systems within one ministry contains important managerial lessons to be learned. Few countries (eg India and South Korea) support the practice of a traditional medical system along side biomedicine and even fewer countries (eg Bhutan, China, Mongolia and Vietnam) officially recognize and support one integrated medical system under the same ministry and health care delivery system. The policy of integration of the two medical systems, including a national drug policy at the managerial level is being

supplemented by the practical implementation of integral medical services in Bhutan.

Traditional Medicine as it has been implemented and integrated into the Bhutanese health care services contain important lessons for public health and the research community.

ACKNOWLEDGEMENTS

We would like to thank the Institute of Traditional Medicine Services and the Ministry of Health, Royal Government of Bhutan for the information included in this paper.

REFERENCES

- Anonymous. Tibetan medicine-an alternative and complementary medicine resource guide. Bethesda, Maryland: Alternative Medicine Foundation Inc. 2000. [Cited 2006 May 10]. Available from: <http://www.amfoundation.org/tibetanmedicine.htm>
- Angele, E. Notes on history of Tibetan medicine. New Delhi: Library of Tibetan works and archives. *Tibetan Med* 1984; 8: 1-14.
- Bagozzi, D. Traditional and alternative medicine. WHO Fact Sheet 2002: 297. [Cited 2006 June 7]. Available from: URL: <http://www.who.int>
- Bright MA. Paradigm shifts. Holistic health and healing. Philadelphia: FA Davis, 2002: 3-30.
- Dagthong JG. An introduction to Tibetan astronomical science. London: The Office of Tibet, 2003. [Cited 2006 May 27]. Available from: URL: http://www.tibet.com/med_Astro/astro.html
- Dharmananda, S. Traditional medicine of Bhutan. Portland, Oregon: Institute for Traditional Medicine, 2002. [Cited 2006 Jul 5]. Available from: URL: <http://www.itmonline.org/arts/bhutan.htm>
- Dompnier R. The art of healing. Tashi Delek, Druk air's in-flight magazine, 1998.
- Dorji P, Morisco P. An introduction to traditional medicine in Bhutan. Thimphu: National Institute for Traditional Medicine, Ministry of Health and Education, 1989.
- Europe World. Bhutan to unveil herbal secrets. London, 2003. [Cited 2006 Apr 18]. Available from: URL: <http://www.europaworld.org/issue15/bhutan/tounveilherbalsecrets291200.htm>
- Institute of Traditional Medicine Services (ITMS). An introduction to traditional medicine services in Bhutan. 2nd ed. Thimphu: Ministry of Health, Royal Government of Bhutan, 2005.
- Institute for Traditional Medicine Services (ITMS). NITM Database: National essential traditional medicine list. Thimphu: Ministry of Health, 2001: 1-8.
- Kinghorn AD, Balandrin MF. Human medicinal agents from plants. Washington, DC: ACS Symposium 1993; series 534.
- Men-tsee-khang Homepage; Tibetan Medical and Astrological Institute, Men-tsee-khang, India; 2002. [Cited 2006 Jun 20]. Available from: URL: <http://www.mentseekhang.org>
- Merrilyn AK. Complementary therapies for health care providers. Baltimore: Lippincott Williams and Wilkins, 1999.
- Pharmaceutical and Research Unit (PRU). A report of research laboratory. Thimphu: National Institute of Traditional Medicine, Ministry of Health, 1995.
- Semichov BV. Dharamsala: Library of Tibetan Works and Archives. *Tibetan Med* 1981; 4: 1-11.
- Tokar, E. Tibetan medicine. 1998. [Cited 2006 Jul 30]. Available from: URL: <http://tibetanmedicine.com>
- Wangchuk P. Bioactive alkaloids from medicinal plants of Bhutan. Wollongong, Australia: Department of Chemistry, University of Wollongong, June 2004.