A REVIEW ON SAFETY OF AYURVEDIC MEDICINE

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ABSTRACT
Ayurvedic medicine is a Hindu system of traditional medicine native to India and a form of alternative medicine. Ayurveda is an unscientific way of treatment. The earliest literature on Indian medical practice appeared during the Vedic period in India. Safety concerns have been raised about Ayurveda, with two U.S. studies finding about 20% of Ayurvedic Indian-manufactured patent medicines contained toxic levels of heavy metals such as lead, mercury and arsenic. Other concerns include the use of herbs containing toxic compounds and the lack of quality control in Ayurvedic facilities. The present review focused on ayurvedic treatments and their safety.

Key words: Traditional medicine, Ayurvedic medicine, Safety evaluation.

INTRODUCTION
Ayurveda (the knowledge for long life) or ayurvedic medicine is a Hindu system of traditional medicine native to India and a form of alternative medicine. Ayurveda is an unscientific way of treatment. The earliest literature on Indian medical practice appeared during the Vedic period in India, i.e., in the mid-second millennium BCE. The Suśruta Saṃhitā and the Charaka Saṃhitā, encyclopedias of medicine compiled from various sources from the mid-first millennium BCE to about 500 CE, are among the foundational works of Ayurveda. Over the following centuries, ayurvedic practitioners developed a number of medicinal preparations and surgical procedures for the treatment of various ailments. Current practices derived (or reportedly derived) from Ayurvedic medicines are regarded as part of complementary and alternative medicine.

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Approach
At an early period, Ayurveda adopted the physics of the five elements (Devanāgarī: पञ्चवट्टयोऽस्मिनयुज्यते; Pṛthvī (earth), Jala(water), Agni (fire), Vāyu (air) and Ākāśa (Sky)) — that compose the universe, including the human body. Chyle or plasma (called rasa dhātu), blood (rakta dhātu), flesh (māṃsa dhātu), fat (medha dhātu), bone (asthi dhātu), marrow (majja dhātu), and semen or female reproductive tissue (śukra dhātu) are held to be the seven primary constituent elements – saptadhātu of the body. Ayurvedic literature deals elaborately with measures of healthful living during the entire span of life and its various phases. Ayurveda stresses a balance of three elemental energies or humors: Vāyu / vāta (air & space – wind), pitta (fire & water – bile) and kapha (water & earth – phlegm). According to ayurvedic medical theory, these three substances doṣas are important for health, because when they exist in equal quantities, the body will be healthy, and when they are not in equal amounts, the body will be unhealthy in various ways. One ayurvedic theory asserts that each human possesses a unique combination of doṣas that define that person's temperament and characteristics. Another view, also present in the ancient literature, asserts that humoral equality is identical to health, and that persons with preponderances of humours are proportionately unhealthy, and that this is not their natural temperament. In ayurveda, unlike the Sāṅkhya philosophical system, there are 20 fundamental qualities, guṇa (Devanāgarī: meaning qualities) inherent in all substances. While surgery and surgical instruments were employed from a very early period, Ayurvedic theory asserts that building a healthy metabolic system, attaining good digestion, and proper excretion lead to vitality. Ayurveda also focuses on exercise, yoga, and meditation.

The practice of panchakarma is a therapeutic way
of eliminating toxic elements from the body.
As early as the Mahābhārata, ayurveda was called the science of eight components (Skt. aṣṭāṅga), a classification that became canonical for ayurveda. They are:
- Internal medicine (Kāya-cikitsā)
- Paediatrics (Kaumārabhṛtyam)
- Surgery (Śalya-cikitsā)
- Eye and ENT (Śālākya tantra)
- Bhūta vidyā has been called psychiatry.
- Toxicology (Agadatantram)
- Prevention of diseases and improving immunity and rejuvenation (rasayana)
- Aphrodisiacs and improving health of progeny (Vajikaranam)

In Hindu mythology, the origin of ayurvedic medicine is attributed to Dhanvantari, the physician of the gods.

Practices
Several philosophers in India combined religion and traditional medicine—notable examples being that of Hinduism and ayurveda. Shown in the image is the philosopher Nagarjuna—known chiefly for his doctrine of the Madhyamaka (middle path)—who wrote medical works The Hundred Prescriptions and The Precious Collection, among others.

Balance
Hinduism and Buddhism have been an influence on the development of many of ayurveda’s central ideas—particularly its fascination with balance, known in Buddhism as Madhyamaka. Balance is emphasized; suppressing natural urges is seen to be unhealthy, and doing so claimed to lead to illness. However, people are cautioned to stay within the limits of reasonable balance and measure. For example, emphasis is placed on moderation of food intake, sleep, sexual intercourse.

Diagnosis
Ayurvedic practitioners approach diagnosis by using all five senses. Hearing is used to observe the condition of breathing and speech. The study of the lethal points or marman marma is of special importance. Ayurvedic doctors regard physical and mental existence together with personality as a unit, each element having the capacity to influence the others. One of the fundamental aspects of ayurvedic medicine is to take this into account during diagnosis and therapy.

Hygiene
Hygiene is a central practice of ayurvedic medicine. Hygienic living involves regular bathing, cleansing of teeth, skin care, and eye washing. Daily anointing of the body with oil is also prescribed [3,4].

Treatments
Ayurveda stresses the use of plant-based medicines and treatments. Hundreds of plant-based medicines are employed, including cardamom and cinnamon. Some animal products may also be used, for example milk, bones, and gallstones. In addition, fats are used both for consumption and for external use. Minerals, including sulfur, arsenic, lead, copper sulfate and gold are also consumed as prescribed. This practice of adding minerals to herbal medicine is known as rasa shastra.

In some cases, alcohol was used as a narcotic for the patient undergoing an operation. The advent of Islam introduced opium as a narcotic. Both oil and tar were used to stop bleeding. Traumatic bleeding was said to be stopped by four different methods: ligation of the blood vessel; cauterisation by heat; using different herbal or animal preparations locally which could facilitate clotting; and different medical preparations which could constRICT the bleeding or oozing vessels. Various oils could be used in a number of ways, including regular consumption as a part of food, anointing, smearing, head massage, and prescribed application to infected areas.

Srotas
Ensuring the proper functions of channels (srotas) that transport fluids from one point to another is a vital goal of ayurvedic medicine, because the lack of healthy srotas is thought to cause rheumatism, epilepsy, autism, paralysis, convulsions and insanity. Practitioners induce sweating and prescribe steam-based treatments as a means to open up the channels and dilute the doshas that cause the blockages and lead to disease [5,6].

History
The mantra Om mani padme hum written on rocks. Chanting mantras has been a feature of ayurveda since the Atharvaveda, the vedic spiritual text, was compiled. One view of the early history of ayurveda asserts that around 1500 BC, ayurveda’s fundamental and applied principles got organized and enunciated. In this historical construction, Ayurveda traces its origins to the Vedas, Atharvaveda in particular, and is connected to Hindu religion. Atharvaveda (one of the four most ancient books of Indian knowledge, wisdom and culture) contains 114 hymns or formulations for the treatment of diseases. Ayurveda originated in and developed from these hymns. In this sense, ayurveda is considered by some to have divine origin. Indian medicine has a long history, and is one of the oldest organised systems of medicine. Its earliest concepts are set out in the sacred writings called the Vedas, especially in the metrical passages of the Atharvaveda, which may possibly date as far back as the 2nd millennium BC. According to a later writer, the system of medicine was received by Dhanvantari from Brahma, and Dhanvantari was deified as the god of medicine. In later times his status was gradually reduced,
until he was credited with having been an earthly king named Divodasa [7,8].

Underwood & Rhodes (2008) hold that this early phase of traditional Indian medicine identified fever (taikman), cough, consumption, diarrhea, dropsy, abscesses, seizures, tumours, and skin diseases (including leprosy). Treatment of complex ailments, including angina pectoris, diabetes, hypertension, and stones, also ensued during this period. Plastic surgery, coughing (a form of cataract surgery), puncturing to release fluids in the abdomen, extraction of foreign elements, treatment of anal fistulas, treating fractures, amputations, cesarean sections, and stitching of wounds were known. The use of herbs and surgical instruments became widespread. The Charaka Samhita text is arguably the principal classic reference. It gives emphasis to the triune nature of each person: body care, mental regulation, and spiritual/consciousness refinement.

Other early works of ayurveda include the Charaka Samhita, attributed to Charaka. The earliest surviving excavated written material which contains references to the works of Sushruta is the Bower Manuscript, dated to the 6th century AD. The Bower manuscript is of special interest to historians due to the presence of Indian medicine and its concepts in Central Asia. Vagbhatta, the son of a senior doctor by the name of Simhagupta, also compiled his works on traditional medicine. Early ayurveda had a school of physicians and a school of surgeons. Tradition holds that the text Agnivesh tantra, written by the sage Agnivesh, a student of the sage Bharadwaja, influenced the writings of ayurveda.

The Chinese pilgrim Fa Hsien (ca. 337–422 AD) wrote about the health care system of the Gupta empire (320–550) and described the institutional approach of Indian medicine, also visible in the works of Charaka, who mentions a clinic and how it should be equipped. Madhava (fl. 700), Sarngadharu (fl. 1300), and Bhavamisra (fl. 1500) compiled works on Indian medicine. The medical works of both Sushruta and Charaka were translated into the Arabic language during the Abbasid Caliphate (ca. 750). These Arabic works made their way into Europe via intermediaries. In Italy, the Branca family of Sicily and Gaspare Tagliacozzi (Bologna) became familiar with the techniques of Sushruta.

British physicians traveled to India to see rhinoplasty being performed by native methods. Reports on Indian rhinoplasty were published in the Gentleman's Magazine in 1794. Joseph Constantine Carpue spent 20 years in India studying local plastic surgery methods. Carpue was able to perform the first major surgery in the western world in 1815. Instruments described in the Sushruta Samhita were further modified in the Western World [8].

Current status

India

According to some sources Up to 80% of people in India used to use some form of traditional medicines, a category which includes Ayurveda. In 1970, the Indian Medical Central Council Act which aims to standardize qualifications for ayurveda and provide accredited institutions for its study and research was passed by the Parliament of India. In India, over 100 colleges offer degrees in traditional ayurvedic medicine. The Indian government supports research and teaching in ayurveda through many channels at both the national and state levels, and helps institutionalize traditional medicine so that it can be studied in major towns and cities. The state-sponsored Central Council for Research in Ayurvedic Sciences (CCRAS) has been set up to research the subject. To fight biopiracy and unethical patents, the Government of India, in 2001, set up the Traditional Knowledge Digital Library as repository of 1200 formulations of various systems of Indian medicine, such as ayurveda, unani and siddha. The library also has 50 traditional ayurveda books digitized and available online.

Central Council of Indian Medicine (CCIM) a statutory body established in 1971, under Department of Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homoeopathy (AYUSH), Ministry of Health and Family Welfare, Government of India, monitors higher education in ayurveda. Many clinics in urban and rural areas are run by professionals who qualify from these institutes.

Sri Lanka

The Sri Lankan tradition of Ayurveda is very similar to the Indian tradition. Practitioners of Ayurveda in Sri Lanka refer to texts on the subject written in Sanskrit, which are common to both countries. However, they do differ in some aspects, particularly in the herbs used. The Sri Lankan government has established a Ministry of Indigenous Medicine (established in 1980) to revive and regulate the practice within the country[40] The Institute of Indigenous Medicine (affiliated to the University of Colombo currently offers undergraduate, postgraduate, and MD degrees in the practice of Ayurveda Medicine and Surgery, and similar degrees in unani medicine.

There are currently 62 Ayurvedic Hospitals and 208 central dispensaries in the public system, and they served almost 3 million people (approximately 11% of Sri Lanka's total population) in 2010. In total there are currently approximately 20,000 registered practitioners of Ayurveda in the country. Many Sri Lankan hotels and resorts offer Ayurveda themed packages, where guests are treated to a wide array of Ayurveda treatments during their stay.

Outside South Asia

Due to different laws and medical regulations in the rest of the world, the unregulated practice and commercialization of ayurvedic medicine has raised ethical and legal issues; in some cases, this damages the reputation of ayurvedic medicine outside India.
Scientific appraisal

In studies in mice, the leaves of Terminalia arjuna have been shown to have analgesic and anti-inflammatory properties. As a traditional medicine, many ayurveda products have not been tested in rigorous scientific studies and clinical trials. In India, research in ayurveda is largely undertaken by the statutory body of the Central Government, the Central Council for Research in Ayurveda and Siddha (CCRAS), through a national network of research institutes. A systematic review of ayurveda treatments for rheumatoid arthritis concluded that there was insufficient evidence, as most of the trials were not done properly, and the one high-quality trial showed no benefits. A review of ayurveda and cardiovascular disease concluded that the evidence for ayurveda was not convincing, though some herbs seemed promising.

Two varieties of Salvia have been tested in small trials; one trial provided evidence that Salvia lavandulifolia (Spanish sage) may improve word recall in young adults, and another provided evidence that Salvia officinalis (Common sage) may improve symptoms in Alzheimer's patients. Many plants used as rasayana (rejuvenation) medications are potent antioxidants. Neem appears to have beneficial pharmacological properties [9].

CONCLUSION

Rasa shastra, the practice of adding metals, minerals or gems to herbs, is a source of toxic heavy metals such as lead, mercury and arsenic. Adverse reactions to herbs due to their pharmacology are described in traditional ayurvedic texts, but ayurvedic practitioners are reluctant to admit that herbs could be toxic and that reliable information on herbal toxicity is not readily available. According to a 1990 study on ayurvedic medicines in India, 41% of the products tested contained arsenic, and 64% contained lead and mercury. A 2004 study found toxic levels of heavy metals in 20% of ayurvedic preparations made in South Asia and sold in the Boston area, and concluded that ayurvedic products posed serious health risks and should be tested for heavy-metal contamination. A 2008 study of more than 230 products found that approximately 20% of remedies (and 40% of rasa shastra medicines) purchased over the Internet from both US and Indian suppliers contained lead, mercury or arsenic.

Ayurvedic proponents believe that the toxicity of these materials is reduced through purification processes such as samskaras or shodhanas (for metals), similar to the Chinese pao zhi, although the ayurvedic technique is more complex and may involve prayers as well as physical pharmacy techniques. However, these products have nonetheless caused severe lead poisoning and other toxic effects.

Due to these concerns, the Government of India ruled that ayurvedic products must specify their metallic content directly on the labels of the product, but, writing on the subject for Current Science, a publication of the Indian Academy of Sciences, M. S. Valiathan noted that the absence of post-market surveillance and the paucity of test laboratory facilities [in India] make the quality control of Ayurvedic medicines exceedingly difficult at this time.

REFERENCES