THE CONCEPT OF AYURVEDA IN MEDICAL SCIENCE, AN INDIAN TRADITIONAL MEDICINE: A REVIEW

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ABSTRACT

Background: A medicinal plant based traditional Indian Medicine Ayurveda plays an important role in health care today’s population all around the world. Ayurveda has been discovered since the time of Indus Valley Civilization and earlier. It is an ancient art healthy living and also one of the world’s oldest medicine systems.

Materials and Methods: The data and information are mainly from publication such as journal, reports and articles for Ayurveda and Traditional Medicine. Information pertaining to Ayurveda use as a traditional medicine was gathered from relevant journal publications. Duplicate article and article without abstract were excluded. A further inclusion of article is achieved by reading the abstract and article thoroughly.

Result: This review, provides a general information pertaining to Indian medical traditions, substances used in the Indian tradition medicine, expanding complementary and alternative (CAM) approaches, use of herbal medicine as dietary supplement, research, and development aspects and impact of globalization on Ayurveda worldwide. In addition, basic information on Siddha and Unani system are also been provided.

Conclusion: Interest in utilization of herbal based products increased drastically in developed countries with changing lifestyle and reducing affordability of current population. Its concept about health and disease promotes the use of herbal compounds, special diets and other unique health practices. Ayurvedic medicine eventually can be encouraged to be a part with pharmaceutical products Time and money are the factors that currently driving people towards taking serious care on their wellness in accordance to traditional medicine.

Keywords: medicinal plants, Ayurveda, complementary and alternative (CAM), Siddha, Unani
1.0 Introduction

Ayurveda, Siddha and Unani are among the systems practiced in Indian traditional medicine in India and globally. Ancient Vedas and other scriptures mention these medical systems. The evidence of archaeology and modern genetics suggested the migration of human population into the Indian subcontinent since prehistoric times. The knowledge of the medicinal value and the uses of plants and other substances traverses back to ancient times (Lahiri, N., & Singh, U. 2010). Ayurveda is the oldest system of medicine and native to India, but Unani system of medicine originated in Greece and was introduced by the Arabs into India. Ayurvedic system of medicine is based on the three dosas (Vata, pitta and Kapha). The body will be healthy, if all dosas exist in equal quantities (Kumar, N. 2015).

Today the traditional medicine practice has become the norm as a modern biomedicine practice because of its usage which is the result of continuous trials and error and exchange of knowledge between diverse communities and regions. Hence, there are differences of thoughts between the scientific community and the general public about the intrinsic value of traditional medicine. There are few evidence that medical practices such as dentistry and trepanation were practiced as early as 7000 BCE in the Indian subcontinent. Indians do appear to have an advanced awareness if health management through water sanitation as well as practices of hygiene in the organised way of agriculture and highlights given to certain medicinal plants and trees. The migrant Aryan tribe’s vedic hymns are the earliest literal form of information on healing practices in the sub-continent. These hymns do gave solutions to particular disease at that time and towards the causes. Most of both physical and mental cure are the combination of rituals, charms, mantras, medicines and surgical interventions. (Lahiri, N., & Singh, U. 2010).

One specific branch of medical practice clearly shows the connection between the earliest works of Ayurveda in it. The introductory concepts and Ayurvedic practices have been elaborated and defined over the centuries and mentioned since early centuries of Common Era and mentioned in Sanskrit. Caraka Samhita, Sushruta Samhita, Ashtangahrdayam, Ashtangasamgraha, Bhela Samhita and Kashyapa Samhita, are the earliest available works with the latter two being incomplete versions. These works include medical practices, with complete systemic manner and defined principles, therapeutic methods and moral guidelines for medical practitioners. Trading and exchanging medicinal plants and knowledge on their usage was on going for centuries between the Indian subcontinent, West Asia and the Indian ocean world. By the end of the first millennium of Common Era, medical physicians were influenced by the Ayurvedic practitioners and local healers. On the other hand, Ayurvedic practices been translated into Persian, Arabic, Tibetan and Chinese. (Zysk, K. G. 1998).

According to Zysk, K. G. (1996), Unani and Siddha have also been practised in the subcontinent. Unani originated from Greek Ionian medicine which is an Arab medical tradition. Unani is still being practiced in and is popular in India and Pakistan. Meanwhile, Siddha is said to have influences of Chinese and Arab medicine.

The aim of this article is to provide the concept of Ayurveda an India traditional medicine. Also, Ayurveda has to discover its own methodology and approach for evidence. Ayurvedic sector should urgently recognize and address for scientific evidence.
2.0 Methodology

2.1 Identification of publications

This review considered articles related to Ayurveda medicine used in Indian Traditional medicine. The articles related to Ayurveda specifically the concepts of Ayurveda in medical science were reviewed from literature in the ProQuest Central, Google scholar, PubMed, ResearchGate. The aim is to identify published studies on Ayurveda in Indian traditional medicine. The key words used were medicinal plants, Ayurveda, complementary and alternative (CAM), Sidda, Unani. The search focused on publications from year 1998 to 2012, several valuable articles published earlier were also included in the review.

2.2 Inclusion and exclusion criteria

Articles describing the same content and without abstract or not related to the concept of Ayurveda medicine were excluded. Moreover, the selection of article was performed by reading the abstracts thoroughly for information related to the concept of Ayurveda in Indian traditional medicine and medical science.

3.0 Results

A total of 45 articles and reports were found but only 18 were found to be eligible for this review. The 18 articles and reports were analyzed and the findings are discussed according to the concept of Ayurveda in medical science.

3.1 Indian Medical Traditions and 20th Century

Ayurveda and other traditional practices are defined as complementary medicine and while modern medicine dominates, colleges offering diplomas in Ayurveda were created and learning in classical texts in Sanskrit were initiated in many places around India. Majority of these colleges combine Ayurvedic education with biomedical education syllabus and western practice on disease and wellness. Ayurvedic and other types of traditional medicines are also manufactured by pharmaceutical companies to fulfill the patients’ requirements in addition to the capability of practitioners to make medical preparations. After independence, India government made efforts to make these Ayurveda, Siddha and Unani recognised which put them on par with allopathic biomedicine. (Zysk, K. 1996).

Ayurvedic teaching colleges, their learning scopes and their diplomas were standardized by the Indian Medical Central council Act in 1970 by the government of India. Currently, Indian government has created the department of AYUSH (Department of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy), which will support research and development of traditional medicine and will create standards and regulations of activities related to practice. Today’s practice is to comply with the norms of modern biomedicine practices. The researchers from both Ayurvedic and modern biomedical are trying to correlate Ayurvedic understanding on the disease with modern biomedical practices. The medical material of Ayurvedic medicine has attracted the interest of researchers and commercial
organisations in India and all over the world to identify the active molecules of traditional formulation. (Zysk.K. 1996).

3.2 Substances used in Indian Traditional Medicine

Sixty percent of the world’s population are practising traditional medicine (Veena.J & Joshi.R.P 2013). Even though alternative medicines are being practiced by the rural population in developing countries as their primary health care method, they are also used by the masses in developed countries where modern medicine dominates. Herbs, minerals, and organic matters are used to produce alternative medicines in traditional systems. Even preparation of herbal drugs only consists of plants. Using plants as a source of medicine is the formal practice practiced by the Indians and plants are one of the important components of India’s health care systems. Seventy percent of India’s rural population depend on Ayurvedic system of medicine. Majority of the practitioners of the traditional medicine system prepare medicine formulations by using their own recipes and dispensing it to their patient (M.M. Pandey et.,al 2013).

Further, in western countries only 40% of them practises herbal medicine in treating various types of health issues (M.M Pandey et.,al 2013). This is due to the interest generated after being exposed by the government agencies on traditional and herbal medicine as well as the NGO’s on the benefits of it. Increasing side effects, adverse drug reactions and cost factors of modern medicines increases the practise of traditional medicines.

Medical plants are produced in huge amounts in India. The plant based treatments practiced in Ayurveda are derived from roots, leaves, fruits, bark or seeds such as cardamom and cinnamon (Veena.J & Joshi.R.P 2013).

Table 1: Top 20 Ayurvedic drugs

<table>
<thead>
<tr>
<th>Sanskrit name</th>
<th>Botanical name</th>
<th>Main activity</th>
</tr>
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<tbody>
<tr>
<td>Amalaki</td>
<td>Phyllanthus emblica</td>
<td>Rasayana</td>
</tr>
<tr>
<td>Ashwagandha</td>
<td>Withania somnifera</td>
<td>Immunomodulatory</td>
</tr>
<tr>
<td>Bhallataka</td>
<td>Semecarpus anacardium</td>
<td>Antiarthritic</td>
</tr>
<tr>
<td>Bilva</td>
<td>Aegle mermelos</td>
<td>Antidiarrhoeal</td>
</tr>
<tr>
<td>Chandan</td>
<td>Santalum album</td>
<td>Antiviral</td>
</tr>
<tr>
<td>Chitraka</td>
<td>Plumbago zeylanica</td>
<td>Antitumour</td>
</tr>
<tr>
<td>Dadima</td>
<td>Punica granatum</td>
<td>Antidiarrhoeal</td>
</tr>
<tr>
<td>Eranda</td>
<td>Ricinus communis</td>
<td>Hepatoprotective</td>
</tr>
<tr>
<td>Guduchi</td>
<td>Tinospora cordifolia</td>
<td>Immunomodulatory</td>
</tr>
<tr>
<td>Haridra</td>
<td>Curcuma longa</td>
<td>Antimicrobial</td>
</tr>
<tr>
<td>Haritaki</td>
<td>Terminalia chebula</td>
<td>Hypolipidemic</td>
</tr>
<tr>
<td>Manjishtha</td>
<td>Rubia cordifolia</td>
<td>Antioxidant</td>
</tr>
<tr>
<td>Maricha</td>
<td>Piper nigrum</td>
<td>Bioenhancer</td>
</tr>
<tr>
<td>Nimba/Neem</td>
<td>Azadirachta indica</td>
<td>Antidiabetic</td>
</tr>
<tr>
<td>Pippali</td>
<td>Piper longum</td>
<td>Bioenhancer</td>
</tr>
<tr>
<td>Sariva</td>
<td>Hemeidesmus indicus</td>
<td>Antiulcer</td>
</tr>
<tr>
<td>Shunthi</td>
<td>Zingiber officinale</td>
<td>Antiemetic</td>
</tr>
</tbody>
</table>
Animal products used in Ayurvedic medicine are milk, bones and gallstones. Meanwhile, animal fats are being prescribed both for consumption and for external use. Prescribed minerals include sulphur, arsenic, lead, copper sulphate and gold. The addition of minerals to herbal medicine is called rasa shastra. Madya is an alcoholic beverage used in Ayurveda. It’s said to adjust the doshas by increasing Pitta and reducing Vatta and Kapha. The raw material, and elements used in fermentation process are sugar-based, fruit-based and cereal-based with herbs, fermented with vinegar and tonic vines. The outcomes of these practices include causing purgation, improving digestion or taste, creating dryness or loosing of joints (Veena.J & Joshi.R.P 2013).

According to Ayurveda, both oil and tar can be prescribed to stop bleeding. This can be done by four different methods such as, ligation of the blood vessels, cauterisation by heat, use of preparations to help clotting and use of elements to constrict the blood vessels. Oils are variably used in traditional medicine practices including for daily consumptions, anointing, smearing, head message, application to affected areas and also oil pulling. Shirodhara is the technique where liquids are being poured on the patient’s forehead (Joshi, J. et.,al 2003).

3.3 Expanding Complementary and Alternative (CAM) Approaches

Approximately 80% of the population in developing countries cannot afford the most basic medical procedure, drugs and vaccines. In both developing and developed countries only the wealthier populations are practicing complementary and alternative medicine. India and countries abroad are largely welcoming the evidence-based researches. The National Centre for complementary and Alternative Medicine has been recognised as the leading agency for scientific research in the field of medicine by the United States Federal Government. Complementary and Alternative medicine practices are compatible with or comparable to Western medical approaches (R. A. Mashelkar 2008).

The user’s behaviour is influenced by economic factors in addition to social, cultural and medical reasons. It is believed that users are choosing complementary and alternative medicines because they are cheaper compared to conventional therapies or systems. One of the most common misconceptions is that only poor people practices these complementary and alternative medicine, which is not always true. The most common reason on why people are now using complementary and alternative medicines is because they believe that the side effects are less. In both developed and developing countries, users of complementary and alternative medicine methods also commonly seek conventional care (M.M.Pandey et.,al 2013).

3.4 Herbal Medicine in Dietary Supplements

Ayurvedic based medications or drugs are marketed in various forms. They are available in both classical forms such as tablets, powder, decoction, medicated oil, fermented product and modern drug presentation forms like capsule, lotions, syrups, ointments, creams, granules, etc.
In India, ayurvedic drug manufacturing sectors is regulated by Drugs and Cosmetic Act 1940. Over the years many more chapters have been added to these acts. Three main agencies are involved in the administration of the Act and Rules enacted by the parliament in India in this sector. They are the Drug Technical Advisory Board and Drug Consultative committee to advise the government regarding this sector, and Drug Controller General of India which deals with licensing and enforcing different laws related to drug manufacturing and dispensing (Chandra, S. 2012).

At state level in India, the Food and Drug Administration Commissioners shoulder this responsibility. Standardization of Ayurvedic drugs are essential. Recently, many international authorities and agencies, such as World Health Organization, European Agency for the Evaluation of Medicinal products and European Scientific Corporation of Pharmacopoeia (ESCOP), US Agency for Health Care Policy and Research, European Pharmacopoeia Commission have been involved. Department of India System of Medicine has started developing new mechanisms to induce and regulate quality control and standardization of botanical medicine (Barnes, P. M. et al., 2008). Ayurvedic herbs may also interact with medications may not be suitable for every person (Patwardhan, B. et al., 2014). Hence, consultation from a qualified physician are necessary before consuming. In addition, heavy metals such as lead and mercury might contaminate some Ayurvedic supplements. Choosing a quality supplement is vital in consuming Ayurvedic herbs supplement. Physician consultation is a must for a person under any other medical treatment such as treatment to control diabetes or high blood pressure to avoid contraindications (M.M. Pandey et.,al 2013).

Attempts to use Ayurvedic concepts treatment in meeting the health care needs of people are made after categorization of the plants resources available in their countries. Non-drug therapeutic approaches such as ‘Panchakarma’ and ‘Ksarasutra’ in Ayurveda can certainly be integrated into other health systems, and hence broadening the choices available to physicians and patients (Zysk, K. G. (1998).

Due to the above said matters, regular guidelines of standardization are required for Ayurvedic medicine and any other traditional medicine. Preclinical studies of Ayurvedic medicines are of great importance for validating the drug safety. As for now, many materials in Ayurvedic products haven’t been studied for safety in controlled clinical trials (Patwardhan, B. 2014). In the United States, Ayurvedic products are regulated as dietary supplements (Barnes, P. M. et al., 2008).

In order to meet the health care needs of people, the utilization of the medicinal plants resources available at their countries, according to Ayurvedic concepts, is certainly a good attempt. Non-drug therapeutic approach such as ‘panchakarma’ and ‘ksarasutra’ can certainly be integrated into other health systems, which will eventually broaden the choices available to physicians and patients (Zysk, K. G. (1998).

With the absence of knowledge from clinical trials, people using herbal medicine may be at risk for serious side effects from taking the wrong dose, using the treatment in a wrong manner or using it with other treatment, which may cause interaction. Findings from randomized clinical trials on herbal medicine might help to uncover new knowledge, which will lead to better health (Patwardhan, B. et al., 2014).
3.5 Globalization of Ayurveda

Globalization of Ayurvedic practice has gained momentum in the past two decades (Ravishankar, B. et al., 2007). Ayurvedic drugs are used as food supplement in many countries including USA, European Union and Japan. Physicians from many parts of the world also practice Ayurveda as an alternative medicine. In countries like USA, Argentina, Australia, Brazil, New Zealand, South Africa, Czech Republic, Greece, Italy, Hungary, Netherland, Russia, UK, Israel, Japan, Nepal and Sri Lanka many facilities are available for conducting short and long term training in Ayurveda. Ayurvedic life styles, dietary habits, daily and seasonal routines are easily adoptable with suitable modification to different countries from different parts of the world by giving due consideration to the cultural milieu existing in those countries and also to the constitutional profile of their population (Barnes, P. M. et al., 2008).

There are no states in United States that license Ayurvedic practitioners, although a few have approved Ayurvedic schools. Many Ayurvedic practitioners are licensed in other health care fields, such as midwifery and massage. Many countries in the world, such as Germany, Italy, Hungary, Switzerland and United States have institutions to practice Ayurveda in the correct way with respect to traditions and high professional competence. It is equally important to respect the epidemiological value of the knowledge system in Ayurveda (Barnes, P. M. et al., 2008).

All medical research should be aimed to assess health effect, minimize bias, chance effects and confounders. There is a necessity for a well-designed rigorous scientific research on Ayurveda medicines and therapeutic practices (Barnes, P. M. et al., 2008).

Many reviews and analysis had indicated that there are severe deficiency of scientific evidence related to clinical practice and scientific research in the present Ayurvedic medicine practice. Additionally, there is a need for the Ayurveda sector to go beyond mere scholarly recitals, reviews and defensive interpretations. Studies and experiments need to be done in Ayurveda based on modern scientific models. A more rigorous scientific research is needed in Ayurveda to evaluate its safety, quality and efficiency. Collaborative research networks like in CAM from Canada and Camarilla from Europe are worth looking at to learn from for scientific and professional pursuits (Patwardhan, B. 2014).

On the other hand, India Government Department of AYUSH has been doing many pre-clinical and clinical trials for new Ayurvedic drugs formulations with the intentions of providing appropriate evaluation methods in order to facilitate and develop Ayurveda and other traditional systems of medicines.

4.0 Conclusion

Classical Ayurveda of yester years cannot be blindly practiced without continuous research on its safety, quality and efficiency. Ayurveda has to discover its own methodology and approach for establishing evidence. The efficacy of traditional herbal medicines may be factual with evidence and not mere opinions, facilitating the scientific evaluation might eventually cause integration of traditional medicine into a national healthcare system, which
in turn will critically assist in integrating a national use of traditional medicine through development of technical guideline and international standards. The Ayurvedic sector should urgently recognize and address the need for scientific evidence. Systematic documentation, appropriate methodology and rigorous experimentation in accordance with good practice coupled with epistemologically sensitive approach will remain crucial in moving towards evidence based Ayurveda.

As a conclusion, it is stated that, the necessity of guidelines for clinical trials on Ayurveda and herbal medicine are absent in present developing countries to approve clinical studies without the need of stringent safety data or clinical trials. Ayurvedic medicine can eventually be elevated to be at par with pharmaceutical products.

**Declaration**

Authors declare that this manuscript has never been published in any other journal.

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