COMPREHENSIVE REVIEW ON WORLD HERB TRADE AND MOST UTILIZED MEDICINAL PLANT

Sunita A. Chaudhary*, Krupa V. Gadhvi, Ankit B. Chaudhary

*Saraswati Institute of Pharmaceutical Sciences, Dhanap, Chiloda, Gandhinagar- 382355,Gujarat, India

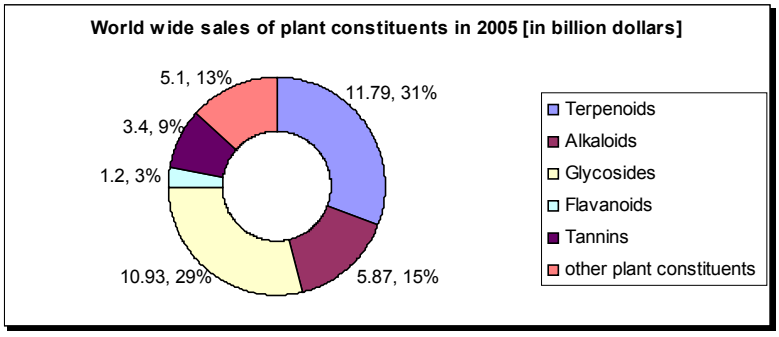
ABSTRACT: Herbal medicine is plant derived material or preparations with therapeutic or other human health benefits, which contain either raw or processed ingredients from one or more plants. Allopathic medicine are said to be more successful in acute conditions of diseases, but due to its side effects plant based medicines are preferred. In the end of 18th century herbal medicines started popularizing in healthcare area. The utilization of medicinal herbs became 60% in most of the countries and 70 -80% of Chiniese, Indian, African and Germany people used from 19th century up to now. Some of the medicinal plants have higest trade in world herb market consistently through past years. These plants are Panax ginseng, Sylibum marianum, Zingiber officinalis, Allium sativum, Glycyrrhiza glabra, Ginkgo biloba, Echinicea indica, Rodeala rosea, Hypericum perforatum and Curcuma longa have shown highest trade in world herb market and these are the top plants which are used in the herbal preparation.

Key words : Traditional medicine, World herb trade

INTRODUCTION

Complementary alternative medicine (CAM) is a group of diverse medical and health care systems, practices, and products that are not generally considered to be part of conventional medicine and are not integrated into the dominant health care system. Other terms sometimes used to describe this health care practices include "natural medicine", "non conventional medicine" and "holistic medicine". Complementary medicine is used together with conventional medicine. An example of a complementary therapy is using aromatherapy A therapy in which the scent of essential oils from flowers, herbs, and trees is inhaled to promote health and well-being and to help a patient's discomfort following surgery. Alternative medicine is used in place of conventional medicine. An example of an alternative therapy is using a special diet to treat cancer instead of undergoing surgery, radiation, or chemotherapy that has been recommended by a conventional doctor [1] . WHO defines traditional medicine "the health practices, approaches, knowledge and beliefs incorporating plant, animal and mineral-based medicines, spiritual therapies, manual techniques and exercises, applied singularly or in combination to treat, diagnose and prevent illnesses or maintain well-being". In some Asian and African countries, 80% of the population depends on traditional medicine for primary health care. [2] In many developed countries, 70% to 80% of the population has used some form of alternative or complementary medicine (e.g. acupuncture). Herbal treatments are the most popular form of traditional medicine, and are highly lucrative in the international marketplace. Annual revenues in Western Europe reached US$ 5 billion in 2003-2004. In China sales of products totaled US$ 14 billion in 2005. Herbal medicine revenue in Brazil was US$ 160 million in 2007.
Over one-third of the population in developing countries lack access to essential medicines. The provision of safe and effective TM/CAM therapies could become a critical tool to increase access to health care. While China, the Democratic People's Republic of Korea, the Republic of Korea and Vietnam have fully integrated traditional medicine into their health care systems, many countries are yet to collect and integrate standardized evidence on this type of health care. 70 countries have a national regulation on herbal medicines but the legislative control of medicinal plants has not evolved around a structured model. This is because medicinal products or herbs are defined differently in different countries and diverse approaches have been adopted with regard to licensing, dispensing, manufacturing and trading (Figure-1) [3].

Figure 1: World Trade of Important plant based medicinal constituents in year 2005 (6)



Past and present scenario of world herb trade

In China, traditional herbal preparations account for 30% to 50% of the total medicinal consumption. In Ghana, Mali, Nigeria and Zambia, the first line of treatment for 60% of children with high fever resulting from malaria is the use of herbal medicines at home [2].
In Europe, North America and other industrialized regions, over 50% of the population have used complementary or alternative medicine at least once. In San Francisco, London and South Africa, 75% of people living with HIV/AIDS use TM/CAM. 70% of the populations in Canada have used complementary medicine at least once. In Germany, 90% of the populations have used a natural remedy at some point in their life [2]).
The introduction of allopathic medicine in the form of base chemicals and pharmaceuticals during the 18th and 19th centuries has demonstrated method for bringing quick relief from sufferings and this won instant admiration and popularity. A new discovery of sulpha drugs, synthetics, cortisones, chemotherapeutic agents and antibiotics in quick succession is the reason for decline in usage of traditional medicines [5]. But during the past decade of 1980's the revival of interest in natural drugs started due to dangers of overmedication or harmful side effects of synthetic drugs. Thus that was a widespread belief; 'green' medicine is healthier than synthetic products[5]. Between 1995 and 2000, the number of doctors who had undergone special training in natural remedy medicine had almost doubled to 10,800. In the United States, 158 million of the adult population use complementary medicines and according to the USA Commission for Alternative and Complementary medicines, US $17 billion was spent on traditional remedies in 2000. In the United Kingdom, annual expenditure on alternative medicine is US$ 230 million. The global market for herbal medicines currently stands at over US $ 60 billion annually and is growing steadily [6].
The leading importers of plant medicinal products are Hong Kong, Japan, Germany, USA, South Korea, Indonesia, Singapore and France. The major exporting countries are China, Germany, Singapore, Egypt, Chilie, USA, Morocco, Mexico, Pakistan, India, South Africa, Sudan, France, Thailand and Hong Kong[6].
There are 3, 50,000 plant species identified by botanist. Only 20-30% investigated for their therapeutic effect. 5-10% of them are used in different diseases as traditional medicines.
According to the appointed world committee of medicinal plants, 378 plants have been investigated as authentic medicinal plant, 245 medicinal plants out of them have official monographs available in well known pharmacopeias and who guidelines. But 133 medicinal plants out of which are not supported by any of these materials because there effects are not evidence base [1].

Table 1: Pharmacognosy of top ten medicinal plants

Name of medicinal plants	Active constituents	Therapeutic category	Mode of action
Ginseng [6,7,12,18,19] (*Panax ginseng*)	Gingsenosides	▪ Adaptogen, Anti stress ▪ Immunity enhancer ▪ Tonic, Anti diabetic	▪ Inhibition of lipid peroxidation ▪ Reduce pancreatic β-cell death
Turmeric (6,7,14) (*Curcuma longa*)	Curcuminoids Curcumin I, II and III	▪ Anti inflammatory, ▪ Anti arthritic, Anti cancer ▪ Wound healing, Antiseptic, ▪ In a heart disease	▪ COX-2 Inhibitor ▪ Reduce Cholesterol and Fibrinogen level
Milk Thistle [6,7,12, 22] (*Silybum marianum*)	Flavanoids - Silymarin, Silybinin	▪ Anti oxidant ▪ Liver tonic ▪ In Gall bladder disorder	▪ Free radical scavenger ▪ Repairs the damaged liver cells
Ginkgo [7,12,16,17] (*Ginkgo biloba*)	Flavone glycosides And Ginkgolides	▪ Anti oxidant ▪ Adaptogenic, Anti ageing ▪ Anti depressant, In Alzheimer ▪ Cardio tonic	▪ Increases cerebral blood flow and oxygen supply ▪ Capillary plaque and Platelet Activated factor (PAF) inhibitor ▪ Enhances blood flow at sensory organs
St. John's Wort [7,12,20] (*Hypericum perforatum*)	Anthacene aglycone - Hypericine, Flavanoidal	▪ Anti depressant, ▪ In sleep disorder, In seasonal disorder, ▪ In dis-menorrhea	▪ Inhibition of 5-HT, Dopamine, GABA reuptake
Rose root [7,12,24,25] (*Rhodiala Rosea*)	Cinnamol alcohol glycosides - Rosavin and salidroside	▪ Adaptogenic , Anti arrhythmic ▪ Mood elevator, memory enhancer, antidepressant, Anti cancer ▪ Anti hyperlipidaemic	▪ 5-HT uptake inhibitor, ▪ ↓se Catecholamine and cholesterol
Garlic [7-9,12,26] (Allium sativum)	Sulphur containing compounds - Allin, Allicin	▪ Anti hyper cholesteraemic ▪ Circulatory diseases (Artherosclerosis) ▪ Aphrodisiac	▪ Stimulate production of Nitric oxide in the lining of blood vessel wall
Echinacea [7,12,26,27] (*Echiniacea indica*)	Echinacoside, Cynarin polysaccharides; volatile oil, echinolone; betaine	▪ Anti arthiritic ▪ Immunomodulator ▪ Natural Antibiotic	▪ Increase Hyaluronic acid at the joints ▪ Reduce hyluronidase producing bacterias
Liquorice [6,30] **Glycyrrhiza glabra**	Glycyrrhizin, Saponin, Glycyrrhizinic acid Flavanoids, liquiritin isoflavones glabridin and hispaglabridins A & B	▪ Antiviral ▪ Antiimflammatory ▪ Antioxidant and ▪ Hepatoprotectiveproperties. ▪ Anti-ulcer	▪ Inhibit growth and cytopathology of numerous RNA and DNA viruses, ▪ Inhibits cyclooxygenase activity ▪ Inhibit the generation of reactive oxygen species (ROS) by neutrophils.
Ginseng [6,7,12,18,19] (*Panax ginseng*)	Gingsenosides	▪ Adaptogen, Anti stress ▪ Immunity enhancer ▪ Tonic, Anti diabetic	▪ Inhibition of lipid peroxidation ▪ Reduce pancreatic β-cell death

Table 2: Top ten herbs in various activities

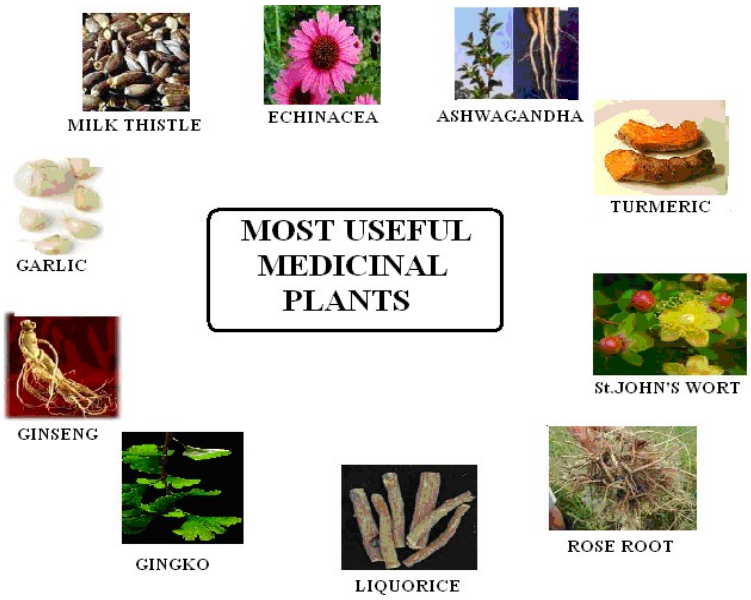
S.No	Anti ageing [21]	Antioxidants [23]	Anti diabetic [31]	CVS drugs	CNS drugs	Anti inflammatory [14]
1.	Ginseng	Citrus fruits	*Momordica charantia*	Ginkgo	Ginseng	St. John's wort
2.	Rose root	Milk Thistle	Tinospora cordifolia	Ginseng	*Centella asiatica*	Ginkgo
3.	*Withania somnifera*	Ginkgo	Pterocarpus marsupium	Fenugreek seeds	Shankhpushpi	Turmeric
4.	*Gynostemma pentaphyllum* (Jiaogulan)	Turmeric	Ficus Glomerulata	Rauwolfia	Rauwolfia	Garlic
5.	Turmeric	Garlic	Gymnema sylvestre	Ephedra	Valerian	Ginger
6.	Ginkgo	Rose root	Azadirachta indica	Digitalis	*Withania somnifera*	Opium
7.	Hawthorne	*Aloe vera*	*Phyllanthus niruri*	Garlic	Opium	Guggul
8.	Grapes Seed Extract.	St. John's wart	Ashwagandha	*Thevetia nerifolia*	Aconite	Liquorice
9.	Milk thistle	Embelica	Echinacea	Goggul	Nux vomica	Capsicum
10.	Gotu kola	Liquorice	*Swertia chirata*	Hawthorn berry	Ephedra	Colchicum

In India approximately 1800 plant species are used in ayurveda, 600 for siddha, about 400 for unani and more than 400 for homeopathic system of medicines. Thus the total number of plant species used in traditional systems of medicines in India comes to near about 8000. A few species are the source of refined compounds used in pharmaceutical industry. Eg terpenoids contributed major part of world wide trade US$7.7 billion, followed by glycosides US$7.2 billion, alkaloids US$3.6 billion and other plant derived compounds were about US$4 billion. The overall global market in the herbal medicines was estimated US$12.4 billion in 1994 increasing up to US$19.6billion in 1999 and reaches to US$ 24.2 billion in 2002; it was expected to have US$ 62 billion in 2005[6].

There are some important most selling and useful drugs from world wide survey is 1) Top ten best selling botanicals in world in 2007 are[12], Garlic, Echinacea , Saw palmetto, Ginkgo, Cranberry, Ginseng, Black cohosh, St. John's wort, Milk thistle 2) Top ten most researched herbs are [13]; Garlic, Hawthorn, Ginkgo Biloba, Ephedra, Licorice, Bilberry, Echinacea, Milk Thistle, Astragalus, Ginseng. 3) The pharmacognosy of top ten most widely used medicinal plants are mentioned in Table 1. 4) All these drugs are having different activities in various field of diseases. Table 2 mentioned the top ten herbs in various activities. 5) Activiteis of plant is due to its specific part only, the most probably whole plant s not useful for activities. Figre-2 includes specific plant parts of most consumed herbs

.

Figure 2: Plant parts of most consumed herbs[6, 7, 10, 12]



CONCLUSION

From the literature review it can be concluded compared to the allopathic drugs, herbal medicines are more successfully used in treatment of diseases. It also reflected growing trade of TM/CAM in world herb market.

REFERENCES

1. National Institutes of Health, National center for complementary and alternative medicines. U.S. Department of Health and Human Services, D347, Updated February 2007;Page: 1-5.
2. "Fact sheet no. 134: Traditional medicine". World Health Organization. 2008; http://www.who.int/mediacentre/factsheets/fs134/en/index.html Retrieved 2009-05-02.
3. Additional Medicine strategy Http://whqlibdoc.who.int/hq/2002/WHO_EDMTRM_2002.1.pdf (2002–2005)
4. Additional medicine, Fact sheet Http://www.who.int/mediacentre/factsheets/fs134/enw/index.html
5. Handa SS, Kaul MK. Pushpangadam, Traditional Medicine: 'Suppliment to Cultivation and Utilization of Medicinal plants'regional Research lab, Jammu-Tawi, 1996;689-701
6. Pushpangadam,Traditional Medicine: 'Suppliment to Cultivation and Utilization of Medicinal plants'regional Research lab, Jammu-Tawi, 1996; 689-701
7. Kalia AN, Worldwide Trade in Medicinal Plants and Derived Products. In: 'Text book of Industrial Pharmacognosy', CBS Publishers, New delhi, First edition, 2005; 8-27.
8. Class Hyla,User's guide to Herbal MedicinesElsevier, First edition, 1-40
9. New Research Supports Garlic's Role in Arresting and Reversing Arteriosclerosis, the e-newsletter of the American Botanical Council,Herbalgram.org , 2005;
10. Durak I, Aytac B, Atmaca Y, Devrim E, Avci A, Erol C, Oral D. Effects of garlic extract consumption on plasma and erythrocyte antioxidant parameters in atherosclerotic patients. Life Sci.2004; 75(16):1959-1966.
11. Kart Yares, Top Ten Herbs for Your Medicine Cabinet, February 20, 2005.
12. Hawkins Ernest B., Ehrlich Steven D. Private practice specializing in complementary and alternative medicine, verimed Healthcare Phoenix AZ Network.
13. 10 Top Best Selling Botanicals: What They Do, http://takingcharge.csh.umn.edu/therapies/botanical/what_they_do
14. Taormina Steven, Top Ten Best-Researched Herbs, http://www.all-natural.com/top-ten.html,http://healthsolutionssource.com/thetenbestresearchedherbs.pdf,Natural Health and Longevity Resource Center
15. Best anti inflammatory herbs, Safe, common natural herbs for inflammation, http://www.herbalremediesworld.com/anti-inflammatory-herbs.html
16. Beckert BW, Concannon MJ, Henry SL, Smith DS, Puckett CL. The effect of herbal medicines on platelet function: an in vivo experiment and review of the literature. Plastic Reconstructive Surgery, 2007;120(7), 2044-2050.
17. Birks J, Grimley Evans J. Ginkgo biloba for cognitive impairment and dementia. Cochrane Database of Systematic Reviews, 2007;18(2), CD003120.
18. Napryeyenko O, Borzenko I., Ginkgo biloba special extract in dementia with neuropsychiatric features. A randomised, placebo-controlled, double-blind clinical trial. GINDEM-NP Study Group Arzneimittelforschung, 2007; 57(1), 4-11.
19. Cheng Y, Shen H, Zhang JT. Anti-amnestic and anti-aging effects of ginsenoside Rg1 and Rb1 and its mechanism of action. Acta Pharmacologica Sinica,2005;26(2): 143-149.

20. Radad K, Gille G, Liu L, Rausch WD. Use of ginseng in medicine with emphasis on neurodegenerative disorders.Journal of Pharmacological Sciences, 2006;100(3):175-86.
21. Clement K, Covertson CR, Johnson MJ, Dearing K. St. John's wort and the treatment of mild to moderate depression: A systematic review. Holistic Nursing Practice, 2006; 20(4): 197-203.
22. Top Ten Proven Herbs That Can Help You Maintain That Youthful Look, http://www.recoveryouth.com/recoveryouth-articles/anti-aging-herbs.php
23. Bradly P. Jacobs MD, MPH, Cathi Dennehy PharmD, Gilbert Ramirez DrPH, Jodi Sapp RN and Valerie A. Lawrence MD, Milk thistle for the treatment of liver disease- A systematic review and meta-analysis Borek Carmia, Anti-Cancer Antioxidants,The American Journal of Medicine, 2002;113 (6):506-515.
24. Maslova LV. The cardioprotective and antiadrenergic activity of an extract of Rhodiola rosea in stress, Eksp Klin Farmakol , 1994; 57(6): 61-6 .
25. Udintsev SN, Decrease of Cyclophosphamide Haematotoxicity by Rhodiola rosea Root Extract In Mice With Ehrlich and Lewis Transplantable Tumors. Eur J Cancer. 1991;27(9):1182.
26. Chevallier , Kindersley D, Herbalpedia; The Encyclopedia of Medicinal Plants, 1996;ISBN: 0-7894-1067-2
27. Barrett, B. Medicinal properties of echinacea: A critical review. Phytomedicine, 2003; 10(1):66-86.
28. k. Paul Beyerl, A Compendium of Herbal Magic, , Phoenix Publishing,; ISBN: 0-919345-45-X 1998.
29. Brahmachari U N, The role of science in the recent progress of medicine, CURRENT SCIENCE, 2001; 81(1):
30. Glycyrrhiza glabra Alternative Medicine Review, http://findarticles.com/p/articles/mi_m0fdn/is_3_10/ai_n15863308/, 2005.
31. Antidiabetic, Herbs in this Category, http://www.motherherbs.com/antidiabetic.html

****