

A Study on Economic Importance of Crude Drugs In the Kanpur area of Indo-Gangetic Plains

Alpana Tewari^{1*}, Archana Srivastava¹ and Kumud Dubey²

*

¹Botany Department D.G.P.G. College Kanpur, U.P., India.

²Centre for Social Forestry and Eco-Rehabilitation, Allahabad, U. P., India

Received: 25th June 2014 /Accepted 10th July /Published: 8th August 2014



Greentree Group

©International Journal of Ayurveda and Pharmaceutical Chemistry, 2014

Alpana et al *Int J Ayu Pharm Chem* Vol. 1, Issue 1, 2014



alpanatewari@gmail.com

Abstract

During the past decade, demand for medicinal plants and their products as well as health systems have attracted global interests. The value of medicinal plants as a source of foreign exchange for developing countries depends on the use of plants as raw materials in the pharmaceutical industry. The present study is aimed to survey Kanpur city to analyze the information regarding the availability of medicinal plants and to prepare its appropriate records concerning the source locality, plant parts used, economic value of herbs and present price trends. The results obtained from the study provided sufficient ground to believe that the traditional medicinal practice using native medicinal plants is still alive, functioning well and is economic significant.

Keywords

Kanpur, Indo-Gangetic Planes, WHO

INTRODUCTION

The practice of herbal medication continues today because of its biomedical benefits as well as due to its place in cultural beliefs and tradition in many parts of world. Herbal medicines are currently in demand and their popularity is increasing day by day. About 500 plants with medicinal use ^[1] are mentioned in ancient literature ^[2] and around 800 plants have been used in indigenous systems of medicine ^[3]. State of Uttar Pradesh has a long tradition of Ayurveda, richly endowed with plant life. The city of Kanpur is situated on the banks of the river Ganga and it been annual and perennial source for medicinal plants.

The use of herbs ^[4] to treat disease is almost universal among non-industrialized

societies. Herbal medicines, being the major remedy in traditional system of medicine ^[5] have been used in medical practices since antiquity and provide outstanding contribution to modern therapeutics. Natural products from plant, animal and minerals have been the basis of the treatment of human disease ^[6]. The active compounds of plants are part of regularly used as traditional medicines and hence their tolerance and safety are relatively better known than any other chemical doses that are new for human use ^[7].

The value of medicinal plants as a source of foreign exchange for developing countries depends on the use of plants as raw materials in the pharmaceutical industry. It provides numerous opportunities for

emerging nations to develop rural well-being. Some of the rural dwellers usually earn their living by selling these natural medicinal herbs.

Table 1 Numbers and plants used medicinally worldwide ^[9]

Country	Plant Species	Medicinal plant species	%
China	26,092	4,941	18.9
India	15,000	3,000	20.0
Indonesia	22,500	1000	4.4
Malaysia	15,500	1,200	7.7
Nepal	6,973	700	10.0
Pakistan	4,950	300	6.1
Philippines	8,931	850	9.5
Sri Lanka	3,314	550	16.6
Thailand	11,625	1,800	15.5
USA	21,641	2,564	11.8
Vietnam	10,500	1,800	17.1
Average	13,366	1,700	12.5
World	422,000	52,885	12.53

GLOBAL POPULARITY

A survey was released in May 2004 by the National Center for Complementary and Alternative Medicine which was focused on the detailed usage and aspects of complementary and alternative medicines (CAM). The survey was limited to adults, aged 18 years and over during 2002, living in the United States. The survey revealed

that; herbal therapy or use of natural products other than vitamins and minerals, were frequently in use. In fact, according to the WHO, approximately 25% of modern drugs used in the United States have been derived from plants ^[8].

Herbal remedies are very common in Europe.

In Germany, herbal medications are dispensed by apothecaries (e.g., Apotheke). Prescription drugs are sold alongside essential oils, herbal extracts, or herbal teas. Herbal remedies are seen by some as a treatment to be preferred than pure medical compounds which have been industrially produced.

China is the leading producer of the medicinal plants in the global market, but on an average India has the highest percentage of the available medicinal plant species (Table 1).

India is a vast repository of medicinal plants that are used in traditional medical treatments (10).

India is the largest producer of medicinal herbs and approximately called the botanical garden of the world.

According to an All India ethno biological survey carried out by the Ministry of Environment and Forests, Government of India, there are over 8000 species of plants

being used by the people of India out of which 90-95% collection of medicinal plants are from the forests (wild-collected).

In India, Ayurvedic medicine has quite complex formulas with 30 or more ingredients, including a sizable number of ingredients that have undergone "alchemical processing", chosen to balance "Vata", "Pitta" or "Kapha" and its medicines are mostly taken from Siddha and other local traditions.

In Tamil Nadu, Tamils have their own medicinal system now popularly called the Siddha Medicinal System. It contains roughly 300,000 verses, covering diverse aspects of medicine such as anatomy, sex ("kokokam" is the sexual treatise of par excellence), herbal, mineral and metallic compositions to cure many diseases that are relevant even to-day (Fig. 3).

Some of these medicinal plants have been featured on Indian postage stamps.

MATERIALS AND METHODS

Kanpur city comes under the Indo-Gangetic plains of India. The city's coordinates are 26.4670° North and 80.3500° East. It is surrounded by two main rivers of India, the Ganges in the northeast and the Pandu River (Yamuna) in the south, unlike many other cities, with a humid subtropical climate.

Survey of Kanpur city was conducted to record the information concerning the medicinal plants and to prepare its appropriate records regarding the source, locality, plant parts used, economic value of herbs and present price trends. Survey was conducted in and around the Kanpur city. During the field visit the survey of data collection was made in different localities viz: Barra, Kalyanpur, Bithur, Cant.area, Kanpur dehat area. The collected samples of plants were brought to the department for identification ^[11] and ethno-medicinal uses ^[2] of the plants were first extracted from the relevant literature ^[12] available in the library of the university and other institutions ^[13]. The ethno-medicinal uses mentioned in literature ^[14] were then cross checked through interviews with local inhabitants in the villages and urban areas surrounding the university campus and visits to the local Kavirag and Vaidyas who act as are plant collectors and local healers. The interviews were conducted randomly from the herb market like Nayaganj, Chauk, Gumti no.5, Kalyanpur, Govindnagar and local shops after obtaining prior informed consent of the participants. Only those ethno-medicinal uses, which were agreed upon by a majority of informants were retained.

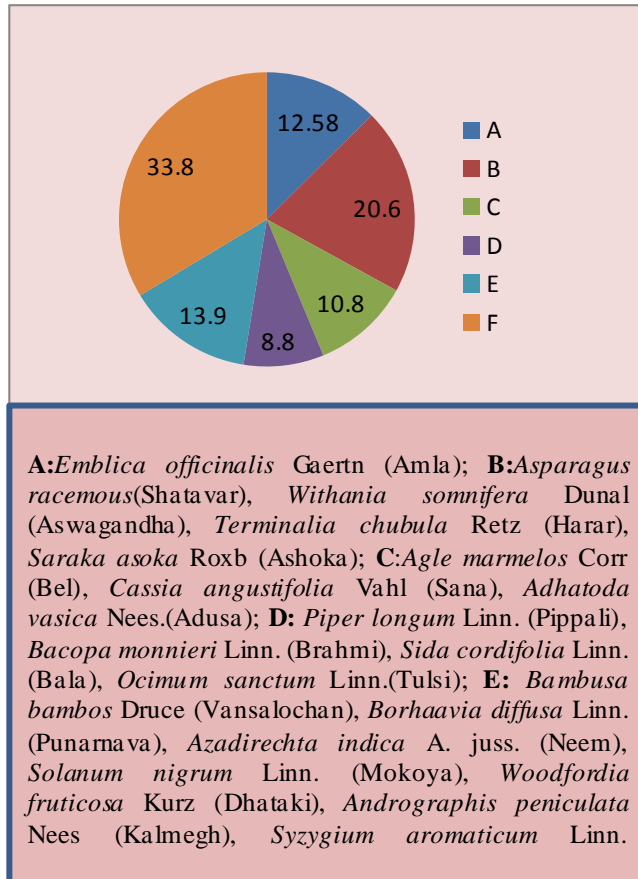
Table 2 List of Some Important Medicinal Plants and Their Uses in Kanpur area (With its Economic Value)

Plant	Common name / Maturity period	Botanical Name or Family	Parts Used	Average Price(Rs.Kg)	Medicinal Uses
	Amla(T)After4th year	<i>Emblica officinalis</i> Fam: euphorbiaceac	Fruit	Rs 30 –60/kg	Vitamin–C, Cough , Diabetes, cold,Laxativ, hyper acidity.
	Ashok(T)10years onward	<i>Saraca asoca</i> Fam : Caesalpinaceac	Bark Flower	Rs 100-225/kg	Menstrual Pain, uterine, disorder, Deiabetes.
	Aswagandha (H), One year	<i>Withania somniafera</i> Fam: Solanaccac	Root, Leafs	Rs 140-250/ Kg	Restorative Tonic, stress, nerves disorder, aphrodisiac.
	Atibala/ Tutti/ Kanghi (S) One year	<i>Abutilon indicum</i> L.Fam: Malvaceae	Leaf, Root, Seed, Bark	Rs40-60/Kg	Abortifacient, bonefracture,bronchit is, child birth, colic, cooling agent, leprosy.
	Bael / Bilva (T)After 4- 5 year	<i>Aegle marmelous</i> Fam: Rutaccac	Leaf, Fruit, Bark	Fruit – Rs 70- 125 / kg Pulp – Rs 60 / Kg	Diarrhoea, Dysentry, Constipation.
	Genda(H) After one year	<i>Tagtes erecta L.</i> Fam: Asteraceae	Root,Leaf Flower,Bud	Rs 30-40/ Kg	Liver illnesses, vomiting,indigestionto othache, kidney troubles, earache.
	Ghikanvar/ Kumari(H)After two year	<i>Aloe vera (L.)</i> Burm.f.Fam: Liliaceae	Leaf	Rs 130-180/Kg	Malaria, Eczema, Cuts and Burns, healing, anti bacterial /fungal, anti inflammatory.

	Guluchi / Giloe (C) With in one year	<i>Tinospora cordifolia</i> Fam:	Stem	Rs 25 –35 per kg	Gout, Pile, general debility, fever, Jaundice.
	Latzeera(H) With in one year	<i>Achyranthus aspera</i> L. Fam: Amaranthaceae	Leaf, Fruit, bud, Whole Plant	Rs 25 –35 per kg	Anti-fertility in women, asthma, leucoderma, liver complaints, renal complaints, skin diseases,cancer.
	Makoi (H) Kakamachi/ With in one year	<i>Solanum nigrum</i> Fam: Solanaccac	Fruit/whole plant	Rs 40 per kg Seed – 200 per kg	Dropsy, General debility,Diuretic, anti dysenteric.
	Neem (T) After 3-4 year	<i>Azardirchata indica</i> Fam : Mahaceae	Rhizome	Rs 45-60/kg	Sdedative, analgesic, epilepsy, hypertensive.
	Sadabahar (H) After one year	<i>Catharanthus roseus(L.)</i> G.Don Fam: Apocynaceae	Leaf, Root, Flower	Rs 45-65/Kg	Leukemia, Blood pressure, Diabetes, Cancer, Tumor.
	Sarpa Gandha (H) After 2 year	<i>Ranwolfia serpentine</i> Fam: Apocynaccac	Root	Root: Rs 60-150/ kg Seed: Rs150-300 per kg	Hyper tension, insomnia.
	Satavari (C)After 2-3 year	<i>Asparagus racemosus</i> Fam: Liliaccac	Tuber, root	Rs 20 –50 per kg	Enhance lactation, general weekness, fatigue, and cough.
	Tusli(H) After one year	<i>Ocimum sanctum</i> Fam: Labiatae	Leaves,stem Whole plant	Rs 30-55/ Kg	Cough, common cold,Respiratory problem

RESULTS AND DISCUSSION

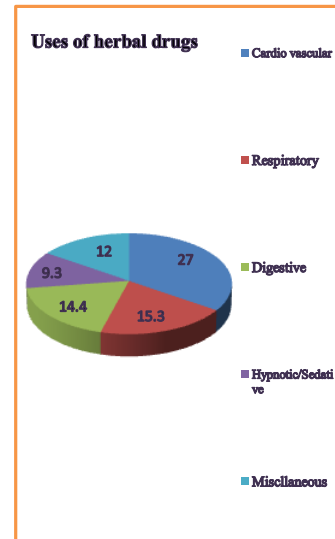
Figure 1 Percentage demand of few major herbal plants in export market of India



The study found that the plants recorded (Table 2) from the site are highly valuable or medicinal uses [3] including diarrhea, dysentery, gonorrhoea, leprosy, paralysis, piles, purgative, stomach complaints, ulcer, arthritis, wounds, cholera, diabetes liver complaints. Some are used for mental diseases, moods and emotions [15], skin diseases, nervous eczema, internal & external for rheumatic conditions [16], syphilis, throat infections urine complaints,

snake bite, body swelling, tumor, malaria, menstrual complaints, rheumatic, swelling, tonic, pulmonary tuberculosis, dog bite, eye diseases, hyperactivity, hydrophobia and lumbago [17].

Figure 2 Use of herbal drugs in different diseases



The study provides sufficient ground to believe that the traditional medicinal practice using native medicinal plants are alive and well functioning in the study area and of economic significance [18]. (Fig. 1 and 3).

After investigations it was also found that craze among the people for a slim body, fair skin as a fashion is growing considerably higher towards the natural products.

Out of the Rs.12, 000 corer industry, Rs.700 corers belong to skincare products and Rs.100 corer for general cosmetics. The perfumery industry is also around Rs.700 corers [19].

Table 3 Price Trends of selected Botanicals in Kanpur (High priced)

Name of species	Traded Parts	Prices (Rs per Kg) as per survey report					Price Range as per survey(Rs.Kg)
		2005-006	2006-007	2007-008	2008-009	2009-010	
<i>Saraca asoca</i>	Bark, Flower	105	110	150	165	225	Rs 100-225 / kg
<i>Withania somnifera</i>	Root, Leafs	140	180	160	210	250	Rs140-250/ Kg
<i>Aegle marmelous</i>	Leaf, Fruit, Bark	65	95	80	100	125	Fruit:Rs 70-125/ Pulp:Rs 60-80 /Kg
<i>Aloe vera</i>	Leaf	130	150	135	160	180	Rs 130-180/Kg
<i>Ranwolfia serpentina</i>	Root	60	55	80	100	150	Root: Rs 60-150/ kg

CONCLUSION

Despite of the dense urbanization, medicinal plants still play a key role in the health care of the local population.

Plants which are commonly used as traditional medicines in rural areas could also be found in the city, and are collected and used by the local population.

As a matter of fact, local Kavirag and village Vaidyas often collected the

Over and above current herbal drugs used in cardio vascular is 27%; respiratory 15.3%, digestive 14.4%; hypnotics and sedatives 9.3%; miscellaneous 12% (Fig 2) [19].

After investigations it was also found that there was great variation in the economic status of crude drugs in the herbal market of Kanpur area (Table 2, 3)

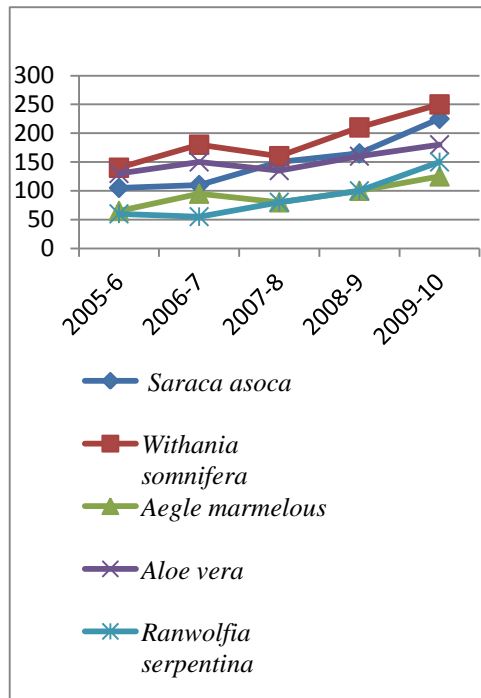
medicinal plants from the different areas of Kanpur.

In order to withstand the increasing competition in the global market, it is necessary to create a brand image, especially in cosmeceuticals and natural products.

Many communities use wild plant parts for the primary healthcare, due to belief in its effectiveness, lack of modern medicines and medication and poor economic status of people.

Due to their ruthless exploitation, many important medicinal plants species are becoming rare and some of them are even categorized under the criteria of “Critically

Figure 3 Price Trends of botanicals



Endangered”. It is estimated that 10% of all plant species are currently endangered in India. These plants are frequently used by

the local inhabitants of the area for treatment of various diseases. The plant parts used, preparation, and administration of drugs vary from one place to other. Therefore, there is an urgent need to conserve these important species for sustainable uses in the future.

Efforts should be made to start sustainable cultivation, harvesting and promoting programs to save our medicinal wealth in the city of Kanpur and the rest part of the country.

REFERENCES

- [1] Handa S.S., Sharma A. In: *Pharmacological studies on Indian medicinal plants; in Review of research in pharmacology in India* (1988–1993), 1994. pp. 176–215.
- [2] Anon: Indian Herbal Pharmacopoeia Volume 1, 1998.
- [3] Chopra, R.N, Indigenous Drugs of India, Academic Publishers, Calcutta, 1982.
- [4] Dahanukar S.A., Thatte U.M, *Ayurveda Revisited*. 3rd Edition, Popular Prakashan, Mumbai, 2000.
- [5] Jain S. K, Human aspects of plant diversity. *Economic Botany*, 54 (4), 2000, pp. 459-470.
- [6] Gogte V.M, *Ayurvedic pharmacology and therapeutic use of medicinal plants*. Bhavan's Swami Prakashananda Ayurvedic Research Centre, Mumbai, 2000.
- [7] Patwardhan B., Vaidya A.D.B., Chorghade M, Ayurveda and natural products drug discovery. *Curr. Sci.* 86, 2004, pp.789–799.
- [8] Patricia M. Barnes, Eve Powell-Griner, and Kim McFann, Richard L. Nahin; (Complementary and Alternative Medicine Use Among Adults: United States, 2002; Advance Data from vital and health statistics, 2004, Number 343.
- [9] Schippmann, U.; leaman, D.J. and cunningham, A.B.; Impact of Cultivation and Gathering of medicinal plants on Biodiversity: Global Trends and Issues. In: Biodiversity and the Ecosystem Approach in Agriculture, Forestry and Fisheries. FAO, 2002, 1-21.
- [10] Chopra RN, Nayar SL and Chopra IC, Glossary of Indian Medicinal plants (Publication and Information Directorate, Council of Scientific & Industrial Research, New Delhi); 1956, pp 256-257.
- [11] Martin, G. J, Ethnobotany: A method manual. Chapman and Hall, London, 1995, pp 267.
- [12] Handa S.S, *Indian Herbal Pharmacopoeia Vol. I & II*. IDMA; Mumbai, 1998, 99.
- [13] Nadkarni, K, Indian Materia Medica vol 1, Bombay, India: Popular Prakashan Pvt Ltd, 1976.

- [14] Roy Chaudhary R. Preface, in *Traditional Medicine in Asia*. In: Roy Chaudhary R., Rafei U.M., editors. *World Health Organization*. Regional Officer for South-East Asia; New Delhi: 2002. pp. iii–iv.
- [15] Russo E. *Handbook of psychotropic herbs*. Haworth Herbal Press; New York: 2001. pp. 153–157.
- [16] Bushell J, Australian Herbal Medicine Classnotes, Nature Care College: Sydney, 1998.
- [17] Rastogi R.P., Mehrotra B.N. *Compendium of Indian medicinal plants*. Vol. 1. Vol. 2. CSIR; New Delhi: 1990-1991.
- [18] Kirtikar K.R., Basu B.D, *Indian medicinal plants*, International Book Publisher, Allhabad, 1985
- [19] Vijay A Mehta (2004), Indian herbal drug industry-Future prospects, Chronicle Pharmabiz Specials; Pharmaceuticals Pvt. Ltd.

Alpana et al *Int J Ayu Pharm Chem Vol. 1, Issue 1, 2014*

✉ alpanatewari@gmail.com