

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

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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)

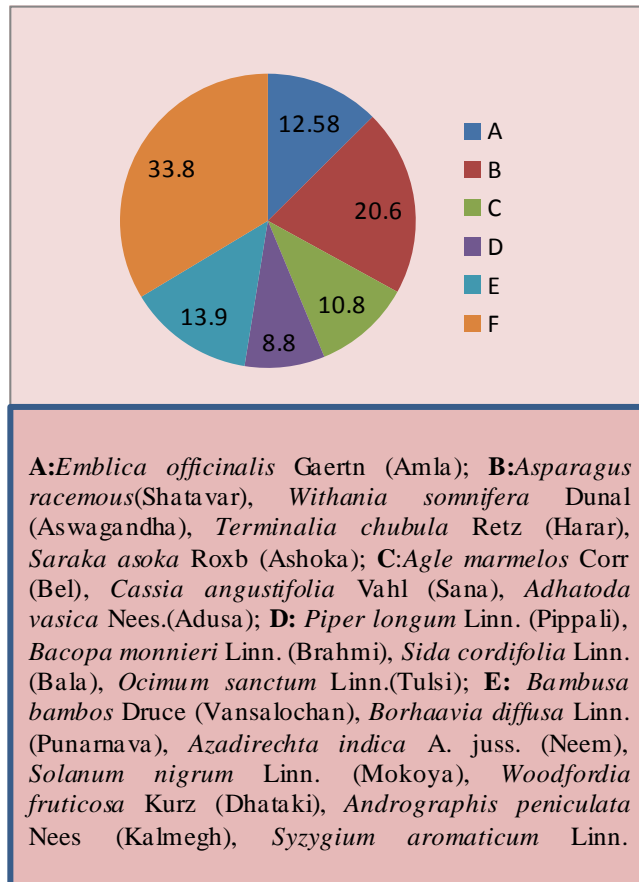
| Plant | Common name / Maturity period | Botanical Name or Family | Parts Used | Average Price(Rs.Kg) | Medicinal Uses |
|--|--|---|---------------------------|--|--|
|  | Amla(T)After4th year | <i>Emblica officinalis</i> Fam: euphorbiaceac | Fruit | Rs 30 –60/kg | Vitamin–C, Cough , Diabetes, cold,Laxativ, hyper acidity. |
|  | Ashok(T)10years onward | <i>Saraca asoca</i> Fam : Caesalpinanceac | Bark Flower | Rs 100-225/kg | Menstrual Pain, uterine, disorder, Deiabetes. |
|  | Aswagandha (H), One year | <i>Withania somnifera</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, gonorrhea, 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

Uses of I

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].

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)

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.

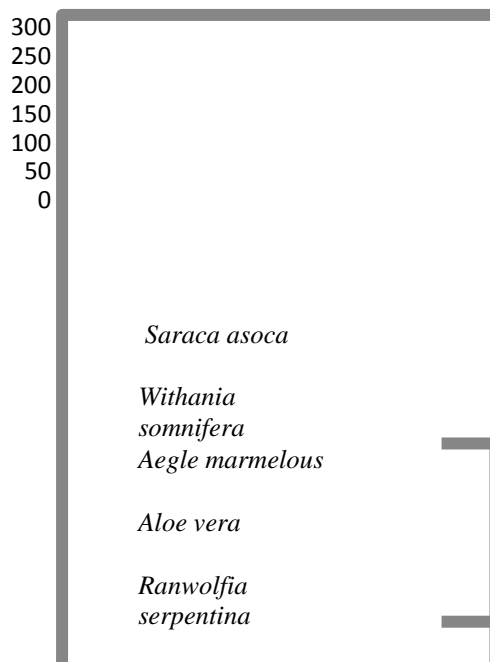
As a matter of fact, local Kavirag and village Vaidyas often collected the

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.

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