

## Folk Medicinal Uses of the Plant Fruits from Banaras Hindu University Main Campus, India

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### ABSTRACT

*The present study reports the folk medicinal uses of the fruits of plants growing on the Banaras Hindu University main campus (India) which spreads over 1,350 acres of land area. A total of 17 plant species belonging to 15 genera and 14 families were recorded on the university campus whose fruits are therapeutically used against different ailments. Myrtaceae, Rhamnaceae and Solanaceae were the dominant families of the plants on the university campus whose fruits are used as folk medicines. Fruits of the plants of tree habit are medicinally more useful than the fruits of the plants of herb and shrub habits.*

*Keywords: Banaras Hindu University, Folk medicines, Folk medicinal plants, Plant fruits*

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### 1. INTRODUCTION

Herbal medicines represents probably the first and certainly the oldest system of human health care. Almost all civilizations and cultures have employed plants in treatment of human diseases. According to the World Health Organization 80% of the population of developing countries relies on traditional medicines for their primary health care needs. The rural people of India are still dependent on traditional medicines for their health care and treatment of diseases (Singh, 2015a). Out of more than

8,000 plant species used in India, many of them are used for their medicinal values by the rural people and tribals to cure their diseases (Tiwari, 2000). The curative properties of the medicinal plants are due to the presence of various complex chemical substances of different composition present as secondary metabolites in one or more parts of these plants. Several studies have been conducted in India to explore the folk medicinal uses of plants and their parts (Jain, 1963; Pandey et al., 1981; Singh and Maheshwari, 1983; Dixit and Pandey, 1984; Saxena, 1986; Malkhuri et al. 1998; Khanna, 2002; Singh et al., 2002; Tomar

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and Singh, 2005a, b; Maliya, 2007; Tomar, 2009; Singh, 2015a).

Banaras Hindu University which is the largest teaching and residential university of Asia was founded by great freedom fighter and social reformer Pandit Madan Mohan Malaviya (1861-1946) in 1916 during the Indian freedom struggle as a national university with donations from both rich and the poor. Presently this vast university has two campuses, 4 institutes, 16 faculties and 140 departments, 4 advanced centers and 4 interdisciplinary centers (Gautam and Mishra, 2015). The newly established fourth institute of the university named Institute of Environment and Sustainable Development (IESD) has been founded by internationally renowned Ecologist Professor J. S. Singh. About a century old main campus of Banaras Hindu University hosts a vast variety of plant species (Singh, 2015b). Studies have been conducted to assess the medicinal floristic wealth of the university campus (Singh, 2015c, d). However, the main objective of the present study was to explore the folk medicinal uses of the fruits of plants growing on the Banaras Hindu University main campus by the rural people residing in villages near the university campus.

## 2. STUDY AREA

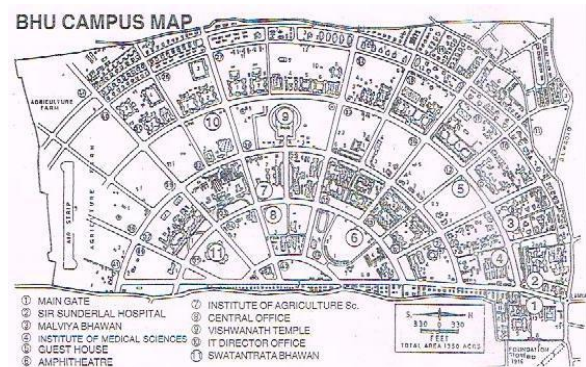
Banaras Hindu University main campus (Fig.1) which spreads over 1,350 acres of land area is located about 5 km south of Varanasi city on the western bank of

sacred river Ganges (25°18' N latitude and 83° 1' E longitude), on levelled topography at an elevation of 76 m (Singh et al., 1971). The campus is covered with alluvial deposits of river Ganges. Soil is fertile and sandy loam in texture.

The climate is Tropical monsoonal type with three distinct season; the cold (November to February), the hot (March to mid-June), and the rainy (mid-June to September), while October is regarded strictly as transitional month. The diurnal range of temperature ranges as average between 13° C and 14.5° C in the cold and hot months. The highest monthly temperature is recorded in May, varying between 32° C and 42° C. The annual rainfall is around 1000 mm (Singh and Rana, 2006).

### Legend to Figure

Figure 1: Map of the Study Area



## 3. METHODOLOGY

The present study is based on intensive field survey conducted between July 2006 to June 2015 from time to time in different seasons on the Banaras Hindu University main campus for the

observations and collections of vascular plant specimens to explore the flora of the university campus. During the field survey it was observed that rural people living in the villages near university campus like Seer Govardhanpur, Bhagwanpur, Chhittupur, Madarwaa, Sushwahi, Karmanveer, Akhri, Nasirpur, Jangampur, Narayanpur, Nuaa, Narottampur, Madhopur, Tadia, Bachchaon, Khanao, Brindavan, Tikari, Kandwa, Avileshpur, Kanchanpur etc. frequently visit the protected university campus to collect the plant fruits for medicinal uses against different ailments. Furthermore, several university employees living in these villages were also observed collecting the fruits of plants on the university campus for the fulfillment of their medicinal needs. The folk medicinal uses of plant fruits is based on interviews with these rural people and the university employees. The traditional medicinal practitioners and elderly people of villages were also consulted to confirm the folk medicinal uses of plant fruits. The plant specimens were identified through various sources (Hooker, 1875-1897; Duthie, 1903-1922; Kirtikar and Basu, 1975). Based on the habits the recorded plants were categorized into three types; herb, shrub and tree. The APG III (2009) classification was followed for arranging the taxa to families.

#### 4. RESULTS AND DISCUSSION

Folk medicinal uses of the fruits of plants from Banaras Hindu University main campus is presented in the Table 1. Past studies on the medicinal flora suggests that Banaras Hindu University main campus hosts a diverse variety of medicinal plants (Singh, 2015c, d). However, in the present medico-ethnobotanical study 17 plant species belonging to 15 genera and 14 families were recorded on the university campus whose fruits are used as folk medicines against several diseases like diarrhoea, dysentery, diabetes, piles, dyspepsia, digestive disorders, gastritis, constipation, seminal debility, arthritis, toothache, eczema, heat stroke, heart disorders, mouth ulcers and earache. Compared to present study on folk medicinal uses of fruits, Singh (2015a) recorded 41 plant species belonging to 38 genera and 23 families on the Banaras Hindu University main campus whose leaves are used as folk medicines against different ailments.

The maximum number of plants i.e. 2 species were represented each by the Myrtaceae, Rhamnaceae and Solanaceae families. Thus the study indicates that Myrtaceae, Rhamnaceae and Solanaceae are the dominant families of the plants of Banaras Hindu University main campus whose fruits are used as folk medicines. In a study on folk medicinal uses of the plant leaves of university campus, Singh (2015a) reported the dominance of

Fabaceae, Asteraceae and Lamiaceae families. Study on wild medicinal flora of the Banaras Hindu University main campus reports the dominance of Asteraceae, Fabaceae and Acanthaceae families (Singh, 2015c) while a study on the entire medicinal floristic wealth of the university campus reveals the dominance of Asteraceae, Fabaceae and Malvaceae families (Singh, 2015d)

Study on habit of the plants reveals that of total recorded species, 5 (29.41%) were represented by the herbs, 3 (17.65%) by the shrubs and 9 (52.94%)

plant species were represented by the trees. Therefore, the study suggests that the fruits of the plants of tree habit are medicinally more useful compared to the fruits of the plants of herb and shrub habits. Contrary to present finding, a study on folk medicinal uses of the plant leaves from Banaras Hindu University main campus reveals that the plants of herbaceous habit are medicinally more useful than the plants of woody habits (Singh, 2015a).

**Table 1:** Folk medicinal uses of the plant fruits from Banaras Hindu University main campus

S. No.	Plant species	Family	Habit	Local name	Medicinal uses
1.	<i>Aegle marmelos</i> (Linn.) Corr.	Rutaceae	Tree	<i>Bael</i>	Pulp of ripe fruit is used in treatment of diarrhoea and dysentery
2.	<i>Annona squamosa</i> Linn.	Annonaceae	Tree	<i>Sharifa</i>	Fruits are used against indigestion
3.	<i>Carica papaya</i> Linn.	Caricaceae	Herb	<i>Papita</i>	Latex from unripe fruits is used against eczema and toothache. Ripe fruits are used in treatment of dyspepsia and constipation
4.	<i>Coccinia grandis</i> (Linn.) Voigt	Cucurbitaceae	Herb	<i>Kunru</i>	Unripe fruits cooked as vegetable is used against diabetes
5.	<i>Kigelia africana</i> (Lam.) Benth.	Bignoniaceae	Tree	<i>Balamkhira</i>	Pulp of fruits is used as poultice for rheumatism. Pulp of ripe fruit dried in sunlight is used as aphrodisiac
6.	<i>Mangifera indica</i> Linn.	Anacardiaceae	Tree	<i>Aam</i>	Pulp of boiled unripe fruit is given with liquid and salt against heat stroke
7.	<i>Morus alba</i> Linn.	Moraceae	Tree	<i>Shahtoot</i>	Fruits are used in treatment of constipation

8.	<i>Musa paradisiaca</i> Linn.	Musaceae	Herb	<i>Kela</i>	Ripe fruits are used in treatment of diarrhoea
9.	<i>Phyllanthus emblica</i> Linn.	Phyllanthaceae	Tree	<i>Aonla</i>	Fruits are used against piles. Juice of fruits is used in treatment of heart disorders
10.	<i>Psidium guajava</i> Linn.	Myrtaceae	Tree	<i>Amrood</i>	Ripe and unripe fruits are consumed against constipation. Unripe fruits are taken against dysentery
11.	<i>Punica granatum</i> Linn.	Lythraceae	Shrub	<i>Anaar</i>	Crushed peels of fruit is used in treatment of diarrhoea and dysentery
12.	<i>Solanum nigrum</i> Linn.	Solanaceae	Herb	<i>Makoy</i>	Fruits are given in treatment of diarrhea
13.	<i>Solanum xanthocarpum</i> Schrad. & Wendl.	Solanaceae	Herb	<i>Bhatkatiya</i>	Fruit juice is used against mouth ulcers and earache
14.	<i>Syzygium cumini</i> (Linn.) Skeels.	Myrtaceae	Tree	<i>Jamun</i>	Fruits are used against digestive disorders
15.	<i>Terminalia bellerica</i> (Gaertn.) Roxb.	Combretaceae	Tree	<i>Bahera</i>	Powdered fruit is taken with hot milk against constipation
16.	<i>Ziziphus mauritiana</i> Lam.	Rhamnaceae	Shrub	<i>Ber</i>	Ripe fruits are consumed against gastritis and indigestion
17.	<i>Ziziphus nummularia</i> (Burm. f.) Wt. & Arn.	Rhamnaceae	Shrub	<i>Jharber</i>	Fruits are used as blood purifier

## 6. CONCLUSION

It can be concluded from the study that fruits of various plant species growing on the Banaras Hindu University main campus are used in traditional system of disease treatment by the rural people living in villages near the university campus. Therefore, these folk medicinal plants needs conservation and propagation on the Banaras Hindu University campus for the fulfillment of the medicinal requirements of the present and future generations of rural population living in vicinity of university campus. This will also be helpful in

inheritance of the traditional knowledge of disease treatment using plant fruits from one generation to the other generation.

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