

## The use of Medicinal Plants among Different Communities of Balochistan against Hepatitis

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**Abstract:** The present study was conducted during 2010 to enlist the medicinally important plants which are used against viral infection especially hepatitis in different areas of Baluchistan. The study was also confined to the traditional medicinal uses of weeds. The people of Baluchistan are using the medicinal plants for the treatment of various diseases including hepatitis and have for a long time been dependent on surrounding plant sources for their health care, food, shelter, fodders, and other purposes. The ethno botanical knowledge of local traditional healers and the native plants that are used for medicinal purposes were collected through questionnaire by interviewing local communities, local men, women, local healers (Hakims), herbal dealers (Pansars) and personal interviews during field trips. The interviews were held in local community, to investigate local people and knowledgeable persons, who are the main user of medicinal plants. Information regarding their botanical name, local name, parts used, chemical constituents, mode of administration and application are tabulated below. A total of 22 plants species were identified by taxonomic description and locally by folk knowledge of people existing in the region. It was the first time to be aware of the significance of weeds with special reference to their medicinal uses in this area of Balochistan. It is suggested that such type of studies should be carried out in future on consumption and maintenance of indigenous knowledge of weeds.

**Key words:** Balochistan, decoction, ethno botanical knowledge, hepatitis, liver, medicinal plants

### INTRODUCTION

Balochistan is the largest province, representing 44% of the land cover of Pakistan. The climate is arid to semi-arid, ranging from coastal tropical to cool temperate in the north. Major ecological zones are; dry temperate forest, sub tropical forest, tropical dry mixed deciduous forest, and desert and mangrove forest. Baluchistan is blessed with diverse flora and fauna due to diverse ecological conditions (Anonymous, 1998).

Viral hepatitis or inflammation of the liver is caused by a number of different viruses named hepatitis A, B, C, D and E. Although exposure to any of these viruses leads to acute infection, however, type B, C and D are unique in causing chronic infection. Traditional medicine for viral hepatitis has mainly focused on plants belonging to the genus *Phyllanthus* of the Euphorbiaceae family. Clinical studies were also designed to compare anti-hepatitis B effects for different species of *Phyllanthus*, i.e., *P. amarus* (L.), *P. niruri* (L.) and *P. urinaria* (L.) (Wang *et al.*, 1995).

The liver is the most important organ of human being, which plays a vital role on regulating various physiological processes in the body. It has great capacity to detoxicate toxic substances and synthesize useful ones. Therefore, the damage which is caused by hepatotoxic agents is of grave consequence to the body as it deprives the liver of its principal functions (Subramoniam and Pushpangadan, 1999).

Infectious diseases are the world's leading cause of premature deaths (Emori and Gaynes, 1993). Therefore, there is a continuous and urgent need to discover new antimicrobial compounds with diverse chemical structures and novel mechanisms of action. On the other hand, viral infections are very common and responsible for a variety of infectious diseases ranging from the common cold to uniformly fatal rabies and AIDS. In contrast to the enormous amount of antimicrobial drugs, very few effective antiviral drugs are available (Vlietinck and Vanden Berghe, 1991).

One of the most important reasons for the lack of success in developing antiviral drugs is due to the nature

Table 1: The local medicinal plants used mostly against hepatitis

S. No.	Scientific name & common name	Parts used	Family	Chemical constituents	Mode of administration and application
1	<i>Viola serpens</i> (Punar, banafsha)	Leaves, flowers, whole herb	Violaceae	Alkaloids, saponins, tannins, amino acids, terpenoids, reducing sugars, glycosides, flavonoids (Anu <i>et al.</i> , 2011)	Fresh or dried plant water along with sugar to make decoction. 2-3 cups of this decoction are given orally to the hepatitis patient for several days.
2	<i>Allium sativum</i> (Lehsan, sum, thom, thum, tuma.)	Bulb	Liliaceae/ alliaceae	Diallyl disulfide, diallyl trisulfide, allyl cysteine sulfoxide, s-methyl cysteine, gamma-glutamyl cysteine, alliinase, myrosinase, peroxidase, vitamins (Abdullah <i>et al.</i> , 1988)	Fresh 2 to 5 cloves per day are applied to the patient. The cloves are also ground to make decoction. The decoction is then used orally for about a week.
3	<i>Rumex sp.</i> (Chirkonzu, churki)	Leaves	Polygonaceae	Nepalin, nepodin and rumicin. (Lili <i>et al.</i> , 2007)	Fresh leaves are crushed along with water and sugar. 1-2 cups are given to the patient of hepatitis orally twice a day for 12 days.
4	<i>Berberis lyceum</i> (Kartoshki, zarch, chowenj, sumbal, kashmal)	Leaves	Berberidaceae	Alkaloids, umbellatine, berberin, barbamine, starch grains and tannins (Tyler <i>et al.</i> , 1981)	Fresh leaves are boiled in water and the decoction is given to the patient orally thrice a day for two to three weeks.
5	<i>Carissa opaca</i> (Granda)	Leaves	Apocynaceae	Salicylate, benzyl benzoate, $\alpha$ -farnesene (Rai <i>et al.</i> , 2005)	Fresh leaves of the plant are boiled in water. 1-2 cups of the decoction is taken orally twice a day for ten to twenty days.
6	<i>Cichorium intybus</i> (Kasthi, kasini)	Whole plant	Compositae/ asteraceae	Gummy water, cellulose, inulin, fiber, ash, glycoside, stearin, mannites, tartaric acid, betaine, choline, lactones, esculetin, esculetin (Zafar and Ali, 1998)	The fresh plant material is boiled along with sugar. The decoction is given to the patient thrice a day for 10-15 days.
7	<i>Citrus medica</i> (Turanj, chakotra, maphat, utraj).	leaves, flowers, roots, fruit	Rutaceae	Limonene, $\gamma$ -terpinene, citropten, citric oxidase acid, malic dehydrogenase, pyruvic, citroflavonoids, hesperidose (Menichini <i>et al.</i> , 2011)	The leaves of plant are ground and decoction is prepared. The decoction is then taken a cup after or meals for several days. The dried rind citrus juice is also used and applied to the hepatitis patient orally.
8	<i>Cucumis sativus L.</i> (Kheera, badrang, batikh, khayaren, kheera.)	Fruit, seeds, leaves	Cucurbitaceae	Methyl-phytosterol, amyirin, multiflorenol, methylenecycloartenol, cycloartenol, tirucallol, protein, isopentenyl adenosine, triolcholol (Prajapati <i>et al.</i> , 2006)	Fresh fruit is cut into small pieces and is given to the patient thrice a day for a month.
9	<i>Curcuma longa</i> (Haldi, zard-choli)	Rhizome	Zingiberaceae	Curcumin, Artermenone, zingiberene, borneol, valepotriates, alkaloids and volatile oils (Ammon and Wahl, 1991)	Paste of rhizome is mixed with cow milk and taken once daily for 12-15 days.
10	<i>Fumaris officinalis</i> (Pitpapra, shahtarah, shahtaro, shahtera)	Whole plant	Fumariaceae	adlumidiceine, coptisine, corytuberine, cryptopine, fumaricine, fumariline, fumaric acid, fumaridine, fumarine, protopine, sanguinarine, sinactine, sugar, tannin (Jakub <i>et al.</i> , 1999)	Fresh plant material is boiled in water. The decoction is given to the patient for 10-20 days.
11	<i>Glycyrrhiza glabra</i> (Asalas-soos, khoga waley, khwazha, malkhuzgi, malkhuzi)	Leaves, whole plant	Papilionaceae/ fabaceae/ legumiosae	The herb contains glycyrrhizin, glycyrrhetic acid, flavonoids, asparagine, iso-flavonoids, chalcones, polysaccharides, sterols, and coumarins (Tang and Eisenbrand, 1992)	The whole plant is boiled in water and the decoction is used. Decoction is also made from the leaves and applied to the hepatitis patient for several days to week.
12	<i>Morus alba</i> (Kitoria, tut, tul)	Fruit	Moraceae	Ascorbic acid, carotene, vitamin D, glutathione, calcium, copper, zinc, boron, riboflavin, drying oil, tannins, penta hydroxyflavone, pentahydroxy benzophenone and maclurin (Haq and Hussain, 1993)	The Fresh juicy fruits are crushed. One cup of the juice is given to the patient twice a day for 10 days.
13	<i>Oxalis corniculata</i> (Miaradian, indian sorrel)	Leaves	Oxalidaceae	Glyxylic acid, oxalic acid, vitexin, isovitexin, neutral lipids, glycolipids, vitamin c, phospholipids, fatty acids and tocopherols. (Prajapati <i>et al.</i> , 2006)	Fresh leaves are crushed and mixed in water. One cup of the juice is given to the patient twice a day for 15 days.

Table 1: (Continue)

14	<i>Phyllanthus amarus</i> L. (Bahupatra)	Whole plant	Phyllanthaceae/ euphorbiaceae	Securinine, norsecurinine, epibubbialine and isobubbialine (Houghton <i>et al.</i> , 1996) Catechin, gallocatechin, quercetin, quercitoid and rutin, amariin, amariinic acid, amarulone, corilagin, elaeocarpusin, furosin, geraniin, geraniinic acid b (Morton, 1981; Foo, 1993)	4 g of powdered mixer is given to the patient twice daily, half an hour before meals with water for several days.
15	<i>Phyllanthus emblica</i> (Amla, amlaki, nellikai)	Fruit	Euphorbiaceae	Alanine, aspartic acid, glutamic acid, lysine, proline, protein, fat, carbohydrates fibers, minerals, iron, niacin, chromium and copper. (Prajapati <i>et al.</i> , 2006)	Dried fruit of the plant is grounded together along with sugar. Approximately 2-3 teaspoons of the powder are dissolved in one cup of water and taken orally thrice a day for 20 days.
16	<i>Picrorrhiza kurroa</i> (Kutaki, kharbaq-e-hindi)	Root, rhizom	Scrophulariaceae	iridoid glycosides, apocynin and androsin, cucurbitacin glycosides, androsin, apocynin, kurrin, kutkin, kutkisterolsesquiterpene, picrorhizetin., picrorhizin (Khare, 2004)	The roots of <i>Picrorrhiza kurroa</i> are boiled in water. The decoction is then given to the hepatic patient for 10-20 days.
17	<i>Piper nigrum</i> (Kali mirich, filfil siyah, gol-mirich)	Seeds	Piperaceae	Piperine, feruperine, piperic acid, methyl piperate, coumaperine starch, resin (Nobuji <i>et al.</i> , 1986)	The seeds are grid and mixed with water. The decoction is kept for night and then applied to the hepatitis patient for 15-20 days.
18	<i>Prunus domestica</i> L. (Alu-bukhara, alucha, ujas)	Fruit	Rosaceae	hlorogenic acid, neochlorogenic acid, caffeic acid, coumaric acid, rutin (Donovan <i>et al.</i> , 1998)	Dried fruit of the plant and is soaked in water for a night. One cup of this extract is given to the patient for 15-20 days.
19	<i>Punica granatum</i> (Dalum, anar)	Fruit, seeds	Punicaceae	Citric acid, sorbitol, mannitol, pelletierine, isoquercetrin, bsitosterol, friedelin, D-mannitol, estrone, glucose, fructose, sucrose, maltose, oxalic acid and organic acid (Ikram and Hussain, 1978)	The fruit of plant is grounded along with sugar. 2-3 teaspoons of the mixture are dissolved in one cup of water and taken orally thrice a day for 20 days.
20	<i>Taraxacum officinale</i> (Shantha, dudal)	Rhizome	Compositae/ asteraceae	Taraxacin, taraxacerine, cerylalcohol, lactuce-roltaraxacin, choline, inulin, tannin, etereal oil, vitamin C, xanthophylls potassium and vitamin A (Prajapati <i>et al.</i> , 2006)	Dried rhizomes are boiled along with sugar. One cup of the decoction is taken orally at morning for 15 days.
21	<i>Withania somnifera</i> (Asgondh, askan, baibru bodmar, bogni buti)	Leaves, roots	Solanaceae	Nicotine, alkaloids, sominine, somniferine, somniferinine, withanine, withaninine, withananinine. An antibiotic has also been isolated from the leaves (Dhuley, 2000)	The leaves are grinded and a decoction is made which is applied to the hepatitis patients. Usually the leaves and roots are given as milk decoction with raw sugar and honey.
22	<i>Zingiber officinale</i> (Adrak, sonth, sunth, zinjibeel)	Rhizome	Zingiberaceae	Gingirol, zingirone, zingiborenol, beta-sitosterol palmitate, isovanillin, hexacosanoic acid 2,3-dihydroxypropyl ester, adenine, glycerols (Abdullah <i>et al.</i> , 1988)	<i>Zingiber officinale</i> is dried and then crushed to make powder. The decoction is also made from the dried rhizome of <i>Zingiber officinale</i> . Usually decoction is kept for a night and applied to the patient for several days.

of the infectious viral agents, which totally depend upon the cell they infect for their multiplication and survival (Vanden Berghe *et al.*, 1986; Vlietinck *et al.*, 1997).

According to WHO reports more than 80% of Asia's population cannot afford formal health care facilities and therefore relies on wild medicinal plant species owing to their cultural familiarity, easy access, simple use and effectiveness (Anonymous, 2009).

Molecular studies on antiviral potentials of *P. amarus* (L.) showed its inhibitory effect on HBV polymerase activity and mRNA transcription due to interactions with HBV enhancer I and C/EBP alpha and beta transcription factors (Lee *et al.*, 1996; Ott *et al.*, 1997). Microarray analyses revealed the anti-HBV activity of ethanolic extract of member of *Phyllanthus* (*P. nanus*) due to over

expression of several genes particularly annexin 7 (Anx7) (Lam *et al.*, 2006).

Herbal medicine is currently experiencing a revival in Western society, along with other complementary therapies such as traditional Chinese Medicines, Osteopathy and Homeopathy (Shinwari and Gilani, 2003).

A great variety of ethno medicinal plants are being studied as a source of natural products useful in the development of novel drugs. It has been established that many of them inhibit several steps of the viral replication cycle of many DNA and/or RNA viruses (Chattopadhyay and Naik, 2007)

Herbal products have been used as folk remedies for different kinds of ailments including viral diseases. (Vanden *et al.*, 1986). Sometimes several medicinal plants

are mixed together to develop a combination therapy for treating a particular ailment. For viral hepatitis such combination therapies have also been tried. For example, liquid fermentation broth of *Ganoderma lucidum* on supplementation with aqueous extract of *Radix Sophorae flavescens* (Chinese herbal medicine) showed strong anti-hepatitis B virus activity in vitro and in vivo. Furthermore, co-fermentation of both these medicinal plant for the development of antiviral broth showed superior antiviral effect compared with simple mixing (Li *et al.*, 2006).

The main objectives of present work are as follows:

- To enlist the native medicinal plants used by local people for the treatment of hepatitis
- To collect local medicinal plants of the area for proper identification and future references
- To investigate the ethno medicinal awareness of local people of Baluchistan.
- To create knowledge among the local community about the protection of native medicinal flora.

## MATERIALS AND METHODS

The present study was conducted during 2010. The information about the plants that are mostly used against hepatitis in Balochistan was inquired from local inhabitants of different districts of Balochistan. The information on medicinal uses of the indigenous plants have been described after gathering information from general local people, experienced aged rural folk, traditional herbal medicine practitioners, local herbal drug sellers and concluded them by consulting literature.

The study was carried out by interviewing respondents in twelve distant sites of Balochistan. They were having a good understanding on the medicinal use of the plants for the said purpose. An effort was also made to confirm the medicinal uses of plants against hepatitis from local healers (Hakeems) and herbal dealers (Pansars) in the study area. Plant materials collected in the present course of research was stored in the herbarium of BUIITEMS Quetta, Pakistan. The plants were then identified with the help of available literature (Goodman and Ghafoor, 1992; Abbasi *et al.*, 2009; Tyler *et al.*, 1981; Zafar and Ali, 1998; Prajapati *et al.*, 2006; Haq and Hussain, 1993; Rai *et al.*, 2005)

## RESULTS AND DISCUSSION

All the plants mentioned in this study are very popular among various communities of Balochistan and played a key role in the Phytotherapy of this region. An overview of these plants along with their main features including local name, family, parts used, chemical constituents, mode of administration and application are gathered in Table 1. In this study it was observed that

70% among men and 30% among women were well-informed about plants. It was also concluded that the aged people had more understanding about the folk uses of medicinal plants. It was further found that most of these plants are already known for similar uses and most species had multi uses.

## CONCLUSION

In the present study, 22 medicinal plant species from different regions of Baluchistan used to treat viral diseases especially hepatitis were reported and documented. The use of these plants to treat various viral illnesses is still needed by the rural communities of Baluchistan, due to poor socio-economic conditions, high cost and a difficult access to allopathic medicines. The majority of the reported species are wild and rare. Now a day, conservation of traditional knowledge is greatly menaced by a lot of factors related to modernization of the region and lack of interest in traditional healers, in transferring it to next generation. It is, therefore, urgent to save the cultural heritage of the natives, by confirming the therapeutically used plants with scientific criteria. In this context, screening for active substances and testing their activities against different viral diseases causing organisms form an interesting subject for the future studies.

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