# Scope for Prevention and Treatment of Hepatitis B with Herbal Medicine:A Systematic Review of Case Studies in Unani Medicine

Mohd Usman, Rubi Anjum, Syeda Ayeman Mazhar, and Nazmeen

*Abstract*—**Hepatitis is an inflammation of the liver caused by viral infection. Hepatitis B (Serum Hepatitis) is an acute systemic infection. It is transmitted by parenteral route having a long incubation period six weak to six months. Hepatitis B virus can form a dangerous alliance with Delta virus. Hepatitis B virus was discovered by Blumberg. It is a complex, 42 nm, double stranded DNA virus, originally known as Dane-Particle. Hepatitis B is a blood borne infection. It is transmitted by infected blood products. Here in this paper an attempt is made to review the Unani concept, causes, sign and symptoms, management and treatment of hepatitis B virus. Some successful case studies of the hepatitis B management through unani formulations and particular regimen have been incorporated to showcase the efficacy of the unani system of medicine in this chronic disease.**

**Keywords—vaccination, kabid, liver, Unani, Dane particle, hepatitis B**

## I. Introduction

The Unani System of medicine owes, as its name advocates, its foundation to Greece. It was the Greek philosopher-physician Hippocrates (460-377 BC) who freed medicine from the demesne of superstition and magic, and presented it with the prestige of science. In Unani System of Medicine liver is known as Kabid or Jigar. The position of liver in the body is as the situation of sun in solar system. It is one of the most vital organs of the body which happens to be the second largest organ in the body next to skin. Liver plays a significant role in preserving body's metabolic homeostasis which includes processing of dietary amino acids, carbohydrates, lipids and vitamins, removal of microbes and toxins from splanchnic blood, enrooted to systemic circulation, detoxification and excretion into bile of endogenous waste products. The diversity and intricacy of hepatic function is such that, it exceeds brain in terms of biologic sophistication and no doubt liver is held in high esteem since ancient times. Enormous functional reserve of liver masks the clinical impact of early liver damage. However, with progression of diffuse disease the consequences of deranged liver function become life threatening.

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Liver is vulnerable to wide variety of metabolic, toxic, microbial, circulatory and neoplastic insults.The dominant primary disease of liver is viral hepatitis, alcoholic liver disease and hepatocellular carcinoma. Infectious disorders of liver dominate the clinical practice of hepatology. Hepatology experienced an extraordinary boost when major viruses that affect the liver were identified. [1], [2], [3], [4], [5]

**Types of Hepatitis B**

Acute phase of hepatitis B

After exposure to HBV, there is an incubation period of 1-4 months.[1], [2], [3], [6] Acute hepatitis B is a clinical syndrome indistinguishable from other acute hepatitis and often consists of influenza like syndrome with fever, malaise, fatigue, anorexia, nausea, vomiting and right upper quadrant pain. This is pre icteric phase and usually lasts 3-7 days. Serum sickness (fever, arthralgia and skin rash) like syndrome appearing during pre-icteric phase is more common in hepatitis B than in other forms of viral hepatitis, being particularly more common in women. This syndrome consists of fever, arthralgia and skin rash. These symptoms usually resolve quickly with the onset of Icterus. With onset of icteric phase, fatigue typically worsen. Jaundice can last from few days to several months, average being 2-3 weeks. Itching and pale stools may occur. Weight loss of 2-10 kg is typical. [1], [2], [3], [4]

Physical signs of acute Hepatitis B are not prominent. Fever is usually intermittent and low grade and occurs commonly in pre-icteric phase. Only other common physical finding is slightly tender hepatomegaly. Wasting, ascites, oedema should suggest presence of chronic liver disease. Acute illness may be more severe in the setting of other co-infections, such as simultaneous acquisition of Hepatitis D, or with underlying alcoholic liver disease. According to a study done by Usha Arora et al in Amritsar, jaundice was the most common presenting symptom (92%) in hepatitis B infection followed by oedema of feet (50%), pain in right hypochondrium (35%), fever (21%) and anorexia (14%).

**Fulminant Hepatitis**

Fulminant Hepatitis B is rare, occurring in only 0.5-1% of patients with acute hepatitis B. [1], [2], [3], [4]Patients typically present with rapidly progressive acute hepatitis with less than 28 days from the time of symptom onset, accompanied by signs of liver failure such as coagulopathy, encephalopathy and cerebral oedema.

HBV mutants have been implicated in several outbreaks of fulminant hepatitis. [4]

Chronic Hepatitis B

It is defined as at least six months of persistent HBV disease. (persistent HBsAg Positivity). [1], [2], [3], [4] In many patients, chronic Hepatitis B is diagnosed not as a result of follow up after a case of icteric illness or specific symptoms but rather as a result of incidental elevations of serum amino-transferase or membership in specific risk category. Symptoms if present can be as non-specific as fatigue unless cirrhosis or Hepatocellular carcinoma is present. Other less common symptoms include nausea, right upper quadrant tenderness, anorexia, myalgias and arthalgias. [1], [2], [3], [4]Physical examination may be normal, or there may be an enlarged liver. Presence of splenomegaly, ascites, or pedal oedema suggests cirrhosis. [1], [2], [3]

Making Viral Diagnosis

Infection with HBV is associated with characteristic patterns of Hepatitis B antigens and antibodies. New molecular tests may be useful to better define the status of viral replication. In addition to confirming the stage of HBV infection, proper interpretation of available tests will aid in the monitoring of patients and selection for antiviral therapy.

Interpretation of serological tests in Hep B [1], [2], [3], [4]

Acute Hepatitis

The diagnosis of acute hepatitis B is based upon the detection of HBsAg and IgM anti HBc. During replicative phase of infection HBeAg and HBV DNA are also present. Recovery is accompanied by disappearance of markers of HBV replication and appearance of antibodies to these proteins. [1], [2], [3], [4]

**HBsAg is the serologic hallmark of HBV infection**. HBsAg appears in serum 1-10 weeks after acute exposure to HBV. [1], [2], [3], [4]

In typical cases, HBsAg becomes undetectable 1-2 months after the onset of jaundice and rarely persists beyond six months. After HBsAg disappears anti-HBs becomes detectable in serum and remains detectable indefinitely thereafter. [1], [2], [3], [4]

Because HBcAg is sequestered within HBsAg coat, HBcAg is not detectable routinely in serum of patients with HBV infection. By contrast, IgM anti-HBc is readily demonstrable in serum beginning within the first 1-2 weeks after the appearance of HBsAg. [1], [2], [3], [5]

Because variability exists in the time of appearance of anti-HBs after HBV infection, occasionally gap of several weeks or longer may separate the disappearance of HBsAg and appearance of anti-HBs. During this 'gap period' or 'window period' IgM anti-HBc may represent serologic evidence of current or recent HBV infection. [2], [3], [4], [5]

**SIGNS AND SYMPTOMS** [8], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20], [21]

- Waram muqa'are jigar: (swelling of inferior aspect)
- Pain
- Lazmi bukhar (continuous fever)
- Severe thirst
- Safravi qai (bilious vomiting)
- Nausea
- Decreased appetite
- Heaviness below ribcage
- Constipation/ ishal (loose motion)
- Hiccups
- **Waram muhaddabe jigar: (swelling of superior aspect of liver)**
- Pain
- Pain increases with breathing
- Moon shape swelling at right hypochondriac region
- Difficulty inbreathing
- Pain radiates up to clavicle
- Dry cough
- Heaviness below ribcage
- Burning sensation and itching
- Blackish tongue
- Dark colored and scanty urine

**Signs and symptoms of Su'e Mizaj Har Jigar (Damvi/Safravi)**

- Pain
- High grade fever
- Dardi (talchat) and Hard stool
- Decreased or no appetite
- Increased thirst
- Safravi qai (bilious vomiting)
- Red /Yellow colored urine
- Nabz- sari'e wa mutawatir (rapid and rhythmic pulse)
- Accept effects of external heat easily
- Qai (vomiting) – zard (yellowish), surkh (reddish), kurrasi and sabz (greenish)
- Constipation
- No pain in ribcage, and no heaviness
- Stool -hard in consistency
- Yellowish tongue
- Small busoor (eruptions) on the tongue
- Puffiness of the face
- Difficulty in lying right lateral posture

**PREVENTION OF HEPATITIS B INFECTION:**

Successful vaccination not only is effective in preventing hepatitis B infection but also prevents the sequelae of chronic hepatitis B infection, and this is the first example that cancer can be prevented by vaccination. The development of hepatitis B vaccines is considered one of the major achievements of modern medicine. Currently available vaccines are both safe and effective, with seroconversion rates of more than 90% in healthy adults and children. The cost of the vaccination is the true major obstacle to the universal vaccination in the developing nations and failure to convince recipients in developed nations that vaccines are necessary even outside traditional high-risk groups. [1], [2], [3], [4], [5]

Post exposure Immunoprophylaxis

Post exposure prophylaxis with HBIG and vaccine is recommended for all nonimmune individuals who have percutaneous, sexual contact, or mucous membrane exposure to blood infected with hepatitis B including human bites that penetrate the skin.

Active Immunization

Both plasma-derived and recombinant forms of vaccine are available. Both are comparable in terms of efficacy and durability. Plasma-derived vaccine was developed first and is no longer available in North America and Europe but

Table 1:

| Test | Acute Hep B | Chronic Hep B | Immunity through vaccination | Infection with precore- mutant | Healthy carrier |
|---|---|---|---|---|---|
| 1. HbsAg | + | + | - | + | + |
| 2. Anti HBS | - | - | + | - | - |
| 3. HbeAg | + | + | - | - | - |
| 4. Anti Hbe | - | - | - | + | + |
| 5. Anti HBc IgM | + | - | - | - | _ |
| 6. HBV DNA | + | + / - | - | + | - |
| 7. ALT | | | Normal | | Normal |

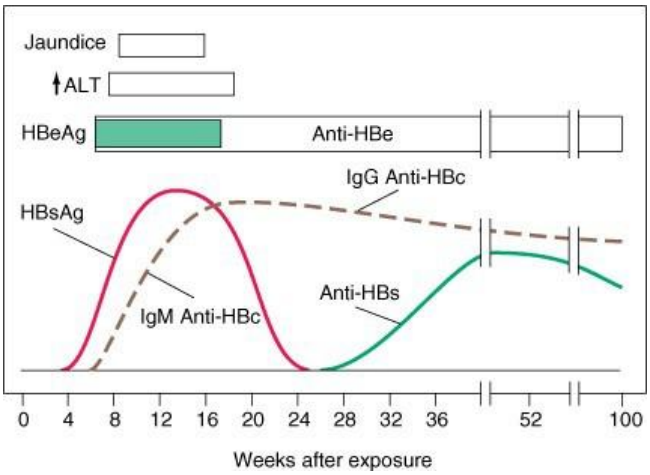


Fig. 1.

is still widely used in parts of Asia and India. Because anti-HBs alone is sufficient to confer protective immunity, most recombinant vaccines have expressed HBsAg only. Two vaccines that express HBsAg (Engerix-B and Recombivax HB) are widely available. These vaccines are approved for use in all age groups. A combination vaccine (Twinrix), which expresses both HBsAg and hepatitis A virus, is also available and is approved for use in adults in the United States and Europe. This vaccine is typically used for convenience when protection against both viruses is needed.

Indications for Vaccination

All persons at high risk for acquiring hepatitis B should be offered vaccination if nonimmune. Targeting of high-risk groups alone, however, failed to attain acceptable rates of immunization and decline in the incidence of hepatitis B. Therefore, many countries have now moved to universal vaccination of all infants and incorporation of hepatitis B vaccines into routine childhood immunization programs. Universal vaccination of all neonates with catch-up vaccination of older children began in 1991 in the United States. Countries that adopted universal vaccination programs in the 1980s have already begun to see declines in the rate of chronic HBV infection and subsequent Hepatocellular carcinoma [1], [2], [3], [4], [5].

**Prevention of Perinatal Transmission**

The current recommendation is to provide passive-active immunization to new-borns of carrier mothers. Infants should receive both HBIG (0.06 mL/kg) and vaccine, and the first dose of vaccine should be given within 12 hours of birth and the second and third doses at 1 and 6 to 12 months, respectively. This regimen has a protective efficacy of 95%. [4], [6]Hepatitis B is a public health problem and more than 350 million people are said to be infected with the hepati- tis B virus worldwide. The hereditary liver disease can be passedgenetically from generation to generation. Examples include Wilson's disease (copper metabolism abnormalities) and hemochromatosis (iron overload). Chemical exposure may damage the liver by irritating the liver cells resulting in inflammation (hepatitis), reducing bile flow through the liver (cholestasis) and accumulation of triglycerides (steatosis). Obesity/overweight increases the risk for liver disease. Obesity often results in the accumulation of fat cells in the liver. Acids that are secreted by these fat cells (called fatty acids) can cause a reaction in the body that destroys healthy liver cells and results in scarring (sclerosis) and liver damage. Previous studies in Ethiopia have demonstrated that the important factors of HBV transmission include blood transfusion; tattooing; a history of surgery, unsafe injections, or abortions;multiple sexual partners; and traditional practices such as scarification, circumcision, and also ear piercing. Although the association between HIV and HBV has become less prominent in Africans, evidence has been found indicating

**Table 2：Important Case Studies showing Promising results in Hep B through Unani treatments:**

| . Unani formulation OR Unani Therapy | constituents | Place of study | Out comes/ results | References [23,24,25,26] |
|---|---|---|---|---|
| syrup kabdeen, iver-52 and lamivudine | Himsra(Capparis spinosa), Kasni (Cichorium intybus), Mandura Bhasama (Farric oxide calx), Kakamachi (Solanum nigrum), Arjuna (Terminalia arjuna), Kasamada (Cassia occidentalis), Brinjasipha (Achillia millifolium), Jhavuka (Tamarix gallica) | Ajmal Khan Tibbya College Amu Aligarh | Jaundice disappeared after 45 days of treatment.- Jaundice disappeared after 1 month due to its inhibiting HBV replication and reverse ranscriptase activity. | Firdaus S, Ali F (2016) Approaches Consideration in the Management of Hepatitis (Warm E Kabid) by Means of Conventional Medicines and Herbal Drugs: A Systematic Review Study. Primary Health Care 6: 241. doi:10.4172/21671079.1000241 |
| Unani formulat ion | shahtara Fumaria officinalis), sarphookah (Tephrosia purpurea), chiraita (Swertia chiraita), gule mundi (Sphaeranthus indicus), and sandal surkh (PterocarpusSantalinus). A crude form of drugs, 5 g of each was advised to be soaked in 50 ml warm water overnight. The soaked drug was then advised to be heated for 10 minutes in the morning and to be ingested lukewarm empty stomach daily for 6 months | inpatient depart ment of Majeedia Unani Hospita<br><br>l (MUH) on Novembe r 13, 2013 , septem ber 2014 | HbsAg became negative at an average of 13 weeks of treatment in these cases. HbsAg in these patients became negative at anaverage of 13 weeks posttreatment. | MOHAMMAD A SIDDIQUI, SHABNAM ANSARI Therapeutic Effect Of A Unani Formulation On Hepatitis B Surface Antigen In Chronic Hepatitis B: A Case Series Asian journal of Pharmaceutical and clinical research vol 8, issue 5 2015 |
| Berg-e-Jhao (Tamarix articulata Vahl.) | Decoction prepared from 7 gm powder of Barg-e-Jhao (Tamarix articulata Vahl.) with 100 ml of water was given by mixing 30 ml each of Arq-e-Mako and Arq-e-Kasni (distillate of Solanum nigrum L. and Chichorium intybus L. empty stomach twice a day for 60 days.. | Regional Research Institute of Unani Medicine<br><br>Aligarh, Uttar PradeshIndia | Barg-e-Jhao (Tamari x articulat a vahl.) and Arqiyat (distillat e) effective ly reduces the size of spleen and liver as mentioned in the Unaniclassical literatur e. | Azhar M, Ansari R I, Ahmad S,Clinical Effect of Barg-e-Jhao (Tamarix articulata vahl.) in Hepatosplenomega ly-A Case Study, Int. J. AYUSH CaRe. 2019; 3(2):128-135 |
| Treatment included both Fasd (venesect ion) and oral treatment | Oral treatment included Sharbat Jigreen 20 ml BD, Capsule Jigreena 2 BD, Arq Makooh 50 ml BD, Majoon Dabidul Warad 10 g BD, Sharbat Bazoori 25 ml BD, Jawarish Pudina Walaiti 10 g evening, Jawarish anarain 10 g after meals, Hab-e-Kabid Naushadri 1 TDS. Fasd (venesection) was done thrice in the study consecutive for three months under aseptic conditions. The 18 gauze needle was inserted into the Wareed-e-Akhal (right median cubital vein) about 25 ml blood was let out. | OPD (out-patient department) on 21-012014 in Majeedia Unani Hospital, Jamia Hamdard, New Delhi, | Bilirubi n levels came down frequent ly along with SGOT and SGPT followed by HbsAg became negative showing virus is not replicati ng in the body. HBVDNA analysis significa ntly showed decrease levels after one month | Int J Adv Pharmacy Med Bioallied Sci. 2, 3, 2014. www.biomedjourn al.com 49 Fasihuzzaman et al.Chronic Hepatitis B treated with Oral Unani Medication along with Fasd (Venesection) Int J Adv Pharmacy Med Bioallied Sci. 2, 3, 2014 |

that HIV makes HBV related liver disease develop more quickly and HIV/HBV co-infection has serious effects on both pregnant women and infants. A previous study among pregnant women in Bahir Dar city showed an HIV/HBV co-infection rate of 1.3%.

**TREATMENT OF WARME JIGAR:** [22]

USOOL-E-ILAJ

1. In warm-e-jigar constipation and more Ishaal (purgation should not be retained for longer time
2. Use of Radae, Mulattif drugs
3. Use of Mohallil drugs with Qabizat (Astringents drugs

Miqar Jigar (Superior part of liver): In this type of waram we have to do Ishaal but do not use Qawi mushil (Strong purgatives) and strong diuretics.

Mohaddib Jigar (Inferior part of liver): In this type of waram we should use Idrar. Mushil should not be used.

Constipation should be avoided. Halela Jat and Saqmoonia never to be prescribed in Warm-e-Jigar. [22]

**TREATMENT**

**Venesection:** Basaliq (Basalic vien) or Akhal (median cubital vein) and after this, cold drinkables should be advised e.g. Aab-e-Kasni, Aab-e-Mako, Anarain and Sikanjabin tursh.

In case of diet, Maul shaeer should be indicated.

**For Damvi and Sufravi warm-e-kabid:**

**1. NUSKHA MURRAWAQAIN:**

Aab-e-Mako sabz murrawaq 4 tola, Aab-e-Kasni sabz murrawaq (4 tola), Sharbat-e Bazoori Motadil 4 tola mix and use in the morning and evening. If fever persists then khaksi is advised.

**2. ZIMAD-E-JIGAR:**

Murmaki 6 masha, Hasha 6 masha, Afsnateen 6masha, Biranjasif 2 masha, Sunbul-e-Tib 2 masha, Saad koofi 6 masha, Gul-e-Baboona 6 masha, Makho Khushk 6 masha, Iklilul Malik 6 masha, Rasot 3 masha, Jadwar 3 masha. Mix and grind with Mako water and make a paste then it should be applied over warm-e-jigar.

## II. Conclusion:

Hepatitis is a severe disease of liver. It should be treated as early as possible. Unani drugs are very helpful and beneficial for the treatment of hepatitis B. Unani system of medicine is effective for liver disorders since a long time in history. There are many single drugs and compound formulations mentioned in Unani classical texts for the management and treatment of hepatitis. There are various case studies carried out in Unani research institutes and hospitals that proved that unani drugs and fasd (venesection) are quite effective in reducing the disease symptoms and alleviating the overall wellbeing. Thus it can be concluded that there is a great hope and scope for USM in the treatment and management of liver disorders specifically (warme Kabid) Hepatitis.

**Competing interests:**

The author declares that they have no conflict of interest.

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