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EFFECT OF AN UNANI REGIMEN IN THE TREATMENT OF 'YARAQĀN' (JAUNDICE): A CASE REPORT

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Case Report

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ABSTRACT

Jaundice due to hepatitis viruses is considered to be a most prevalent disease worldwide. In Unani literature, it is referred as *'yaraqān'* which is caused by inflammatory diseases of liver, intra or extra-hepatic obstructions, and poisoning due to drugs or animals. Several Unani drugs including *Ma'jun Dabid al-Ward*, syrup *Jigreen, Araq-i-Mako, Araq-i-Kasni*, etc are frequently used for the treatment of jaundice and liver disorders including infective hepatitis. A 16 year old male patient suffering from yellowish discoloration of sclera, skin, mucous membranes and urine, nausea, vomiting, loss of appetite and fever for one week admitted in the male ward of RRIUM, Chennai. The laboratory investigations revealed severe hyperbilirubinemia, raised serum transaminases, alkaline phosphatase and negative HBsAg. On the basis of history, clinical observations and laboratory investigations, the patient was diagnosed as a case of '*yaraqān*' (jaundice) which may be due to acute viral hepatitis. A Unani regimen comprising *Ma'jun Dabid al-Ward* (5 g twice a day), syrup *Jigreen* (10 ml twice a day), Araq-i-Mako (75 ml twice a day), Araq-i-Kasni (75 ml twice a day) for 25 days, *Sharbat-i-Khaksi* (10 ml twice a day for 7 days), and *Habb-i-Tursh Mushtahi* (1 g twice a day) for 15 days were given by oral route. The fever has subsided after 7 days and the appetite improved after 15 days of the treatment. The yellow discoloration of sclera and mucous membranes started to reduce gradually from 7th day onwards. At the end of the treatment, the laboratory reports revealed that the total bilirubin, direct bilirubin, indirect bilirubin, SGOT, SGPT and ALP were within normal range. The core objective of this case report is to re-emphasize the effectiveness of Unani medicine particularly in the treatment of jaundice. Thus, this data may be helpful to increase awareness amongst the common people and scientific community for the popularity of Unani medicine in general and for the treatment of jaundice and liver disorders in particular.

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Keywords: '*Yaraqān*', Jaundice, acute viral hepatitis, *Ma'jun Dabid al-Ward*, Unani medicine.

Abbreviations:
ALP: Alkaline phosphatase; CCRUM: Central Council for Research in Unani Medicine; ESR: Erythrocyte Sedimentation Rate; GOPD: General Out-patient Department; HBsAg: Hepatitis B Surface Antigen; IMPCL: Indian Medicines Pharmaceutical Corporation Limited; LFT: Liver Function Test; RRIUM: Regional Research Institute of Unani Medicine; SGOT: Serum Glutamic-oxaloacetic transaminases; SGPT: Serum Glutamic-pyruvic transaminases; WHO: World Health Organization.

INTRODUCTION

Etymologically, the word 'jaundice' is derived from a French word 'jaune' which means 'yellow'. Clinically, it is defined as yellowish discoloration of the sclera, skin, and mucous membranes of the body due to bilirubin present in the serum[1] whereas pathologically the presence of bilirubin level >3 mg referred to as jaundice.[2] The new onset of jaundice is commonly occurred due to pre, intra and extra-hepatic causes. A cohort study carried out on 732 patients presented new onset of jaundice during 1999-2003 AD in the United States, has reported that 55.1% cases of jaundice were found due to involvement of liver caused by hepatitis viruses, alcohol and drugs while remaining 45% caused by extra-hepatic

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diseases.[3] Nowadays, the morbidity and mortality due to infections of hepatitis viruses are globally increased. According to a report of the World Health Organization (WHO), around 1.4 million people are died every year because of viral hepatitis. Hepatitis A and E viruses are transmitted into the human body through fecal-oral route due to ingestion of contaminated food and water[4] while Hepatitis B and C viruses spread via blood.[5] Though, Hepatitis A & E are considered as self-limiting infection, rarely they become serious and sometimes fatal particularly in immunocompromised patients and pregnant women.[4] The WHO stated that 1.4 million cases of Hepatitis A and 20 million patients of Hepatitis E are reported every year worldwide. Hepatitis E is the most commonly prevalent viral hepatitis amongst all types.[5] The long persistence of jaundice may cause some serious complications like kernicterus, coma, death, etc.[6]

The Unani science is fundamentally based on Hippocratic doctrine of humoural theory which hypotheses the presence of fours humours i. e. *dam* (sanguine), *balgham* (phlegm), *safrā* (yellow bile) and *sawdā* (black bile) in the body.[7] The equilibrium of these humours maintains the health status of an individual. When an imbalance in the quality or quantity of anyone of them is found, the disease is appeared.[8] In Unani literature, the jaundice is referred as '*yaraqān*'.[9] It is defined as yellowish discoloration of skin, mucous membranes, sclera and body fluids due to accumulation of *safrā* (bile) in the blood.[10] Abul Mansoor al-Hasan al-Qumri (10th century AD) stated that the jaundice is developed due to various etiological factors such as increased production of bilirubin in the blood caused by poisoning of drugs or animals, inflammation of liver, intra or extra-hepatic obstructions, following lysis from certain diseases, etc.[11] Apart from yellowish discoloration of eyes, skin and body fluids, several other clinical features such as nausea, vomiting, loss of appetite, thirst, bitter taste of mouth, constipation, sweating,[12] abdominal pain, weight loss, general body weakness, pruritus, diarrhea, anemia,[6] etc may also be associated with jaundice. Ibn Zuhr (1094-1162 AD) advocated that in case of acute hepatitis the jaundice is usually occurred after fever. He advised that vegetable juices prepared with watermelon and bottle gourd should be given to such patients.[13] Several Unani single drugs viz. *Kasni* (*Cichorium intybus* L.), *Karafs* (*Apium graveolens* L.), *Badyan* (*Foeniculum vulgare* Mill.), *Mako* (*Solanum nigrum* L.),[10] *Afsanteen* (*Artemisia absinthium* L.), *Aaloo Bukhara* (*Prunus domestica* L.), *Tamar Hindi* (*Tamarindus indica* L.), *Turanjbeen* (*Alhagi maurorum* Medik.), *Halela Zard* (*Terminalia chebula* Retz.), *Banafsha* (*Viola odorata* L.), *Khayar Shambar* (*Cassia fistula* L.), *Bathua* (*Chenopodium album* L.), *Khubbazi* (*Malva sylvestris* L.), *Anisoon* (*Pimpinella anisum* L.), etc[6] and compound preparations like *Ma'jun Dabid al-Ward*, *Sharbat-i-Revand*, *Sharbat-i-Nilofar*, *Sharbat-i-Afsanteen*, *Araq-i-Kasni*,[6] *QursAfsanteen*, *Qurs Ward*, *Qurs Tabasheer*, *Qurs Kafoor*, *Tiryaq-i-Kabeer*,[14] *Jigreen*, *Sharbat-i-Deenar*, etc are prescribed for the treatment of jaundice.

Case presentation

Brief history of the patient

A 16 year old male patient belonging to poor socio-economic condition visited the general out-patient department (GOPD) of Regional Research Institute of Unani Medicine (RRIUM), Chennai, Tamil Nadu, India on 3rd August 2022 with the chief complaints of yellowish discoloration of sclera, skin, mucous membranes and urine, nausea, vomiting, loss of appetite and fever for one week. The patient had a travelling history one week before the onset of clinical features. The patient was admitted in the general male ward of RRIUM, Chennai on same day for a period of 25 days. The GOPD registration number of the patient was 60056 and IP registration number was 2022/Aug/00927. According to the statement of the patient, he was healthy one week before. He felt nausea, vomiting and loss of appetite with gradual onset. He also informed that after appearing of these symptoms the color of sclera and urine got changed into yellow. He had no family history of any disease including jaundice.

Physical examination of the patient

The physical examination of the patient was carried out in which the notable yellowish discoloration of sclera, mucous membranes and skin, and mild tenderness in the right hypochondrium due to enlargement of the liver were noted. There was no guarding or rigidity found during palpation of the abdomen. The liver was found to be slightly enlarged with margins regular and smooth. The *mizaj* (temperament) of the patient was evaluated through questionnaires designed by the Central Council for Research in Unani Medicine (CCRUM) and it was found to be *safrāwī* (bilious). The general condition of the patient was good. He was fully conscious and well-oriented. The pulse rate, blood pressure, respiratory rate, body temperatureand body weight were recorded as 84/ minute, 100/ 60 mmHg, 18/ minute, 98 °F and 42 kg, respectively at the time of admission.

Laboratory investigations

At the time of admission, the patient was investigated for liver function test (LFT) including total bilirubin, direct bilirubin, indirect bilirubin, SGOT, SGPT, Alkaline phosphatase, HBsAg, complete blood count, ESR, and routine and microscopic examination of urine. The laboratory reports showed the presence of hyperbilirubinemia (total bilirubin 14.0 mg/dL; direct bilirubin 7.2 mg/ dL, indirect bilirubin 6.8), raised serum transaminase (SGOT 138 U/L, SGPT 255 U/L, ALP 166 U/L) (Graph 1 & 2) and presence of bile pigment in the urine. The Australia antigen was found to be negative. The ESR of the patient was also found to be raised as 17 mm and 61 mm in half and one hour, respectively. The complete picture of blood didn't show any significant changes.

Differential diagnosis

The differential diagnosis was made with Hepatitis B, alcoholic hepatitis and drug-induced hepatitis. The patient had no history of consumption of alcohol. He had also no history of taking anti-tubercular and other drugs. The Australia antigen test done at base line indicates that the patient was not suffering from Hepatitis B.

Diagnosis

The diagnosis of the disease was made on the basis of history and physical examination of the patient, and laboratory findings. The patient was diagnosed as a case of *'yaraqān'* (jaundice) which might be due to the inflammation of liver caused by acute hepatitis viruses.

Management of the patient

Dietary modifications

The patient was provided diet by the hospital as per dietary plan of jaundice's patient in which easily digestible and fat restricted food items were served to him during the whole period of hospitalization. The patient was also advised to take watermelon's juice and plenty of water.

Unani regimen

The patient was treated with following drugs:

Drugs & Action	Manufacturer	Batch Number	Expiry	Dose	Mode of administration	Duration
Sharbat-i-Khaksi (Anti-pyretic)	Auliya Herbals	001	09/2024	10 ml twice a day	Oral	10 days
Habb-i-Tursh Mushtahi (Appetizer)	IMPCL	IMG-0101	05/2025	2 pills twice a day	oral	15 days
Ma'jun Dabid al-Ward (Hepatoprotective)	IMPCL	IMG-0015	04/2025	5 g twice a day	oral	25 days
Araq-i-Mako (Resolvent & Hepatoprotective)	Hamdard Laboratories	22AM013	03/2023	75 ml twice a day	oral	25 days
Araq-i-Kasni (Resolvent & Hepatoprotective)	Hamdard Laboratories	MAK 363	04/2023	75 ml twice a day	oral	25 days
Syrup Jigreen (Hepatoprotective)	Hamdard Laboratories	MEF096	01/2025	10 ml twice a day	oral	25 days

Sharbat-i-Khaksi[15]

Unani name	Scientific/ English name	Part used	Quantity
Badiyan	*Foeniculum vulgare* Mill.	Seed	100 g
Barg-i-Gaozaban	*Borago officinalis* L.	Leaves	60 g
Khaksi	*Sisymbrium irio* L.	Seed	100 g
Unnab	*Ziziphus jujuba* Mill.	Fruit	100 g
Shakar Safaid	Sugar	----	1.5 kg
Shahdeen	Honey	----	400 g
Sat Leemu	Citric acid	Crystal	4 g
Natroon Banjawi	Sodium benzoate	Salt	2 g

Habb-i-TurshMushtahi[16]

Unani name	Scientific/ English name	Part used	Quantity
Zanjbeel	*Zingiber officinale* Roscoe.	Rhizome	1 kg
Namak-i-Siyah	Black salt	Salt	250 g
Namak-i-Sang	Stone salt	Salt	250 g
Qaranfal	*Syzygium aromaticum* (L.) Merr. & L. M. Perry	*Fruit*	20 g
FilfilDaraz	*Piper longum* L.	Fruit	20 g
Kibreet Maghsool	Sulphur	Crystal	20 g
Heel Khurd	*Elettaria cardamomum* (L.) Maton	Seed	15 g
Aab-i-Leemu Kaghzi	Maxican lime	Juice	Q. S.

Ma'junDabid al-Ward[16]

Unani name	Scientific/ English name	Part used	Quantity
Sumbul-ut-Teeb	*Nardostachys jatamansi* DC	Rhizome	10 g
Mastagi	*Pistacia lentiscus* L.	Resin	10 g
Zafran	*Crocus sativus* L.	Style & Stigma	10 g
Tabasheer	*Bambusa bambos* (L.) Voss.	Concretion	10 g
Darchini	*Cinnamomum zeylanicum* Blume	Stem bark	10 g
Izkhar	*Cymbopogon jwarancusa* (Jones) Schult	Whole plant	10 g
Asaroon	*Asarum europaeum* L.	Rhizome	10 g
Qust Shireen	*Saussurea lappa* C.B. Clarke	Root	10 g
Gul-i-Ghafis	*Gentiana olivieri* Griseb.	Flower	10 g
Tukhm-i-Kasoos	*Cuscuta reflexa* Roxb.	Seed	10 g
Majeeth	*Rubia cordifolia* L.	Stem	10 g
LukMaghsool	Lac	Resin	10 g
Tukhm-i-Kasni	*Cichorium intybus* L.	Fruit	10 g

Tukhm-i-Karafs	*Apium graveolens* L.	Seed	10 g
ZarawandMudharaj	*Aristolochia rotunda* L.	Tuber	10 g
Habb-i-Balsan	*Commiphora opobalsamum* (L.) Engl.	Seed	10 g
Ood Hindi	*Aquilaria agallocha* Roxb	Heart wood	10 g
Qaranfal	*Syzygium aromaticum* (L.) Merr. & L. M. Perry	Fruit	10 g
Heel Khurd	*Elettaria cardamomum* (L.) Maton	Seed	10 g
Waraq-i-Gul-i-Surkh	*Rosa damascena* Mill.	Petals	200 g
Sugar	*Saccharum officinarum* L.	----	600 g

***Araq-i-Mako*:**[16]

Unani name	Scientific/ English name	Part used	Quantity
Mako Khushk	*Solanum nigrum* L.	Fruit	1 Part
Aab	Water	----	20 Parts

***Araq-i-Kasni*:**[16]

Unani name	Scientific/ English name	Part used	Quantity
Tukhm-i-Kasni	*Cichorium intybus* L.	Fruit	250 g
Aab	Water	----	5 lit

Syrup *Jigreen*: [Each 15 ml contains] [Proprietary Medicine of Hamdard Laboratories].

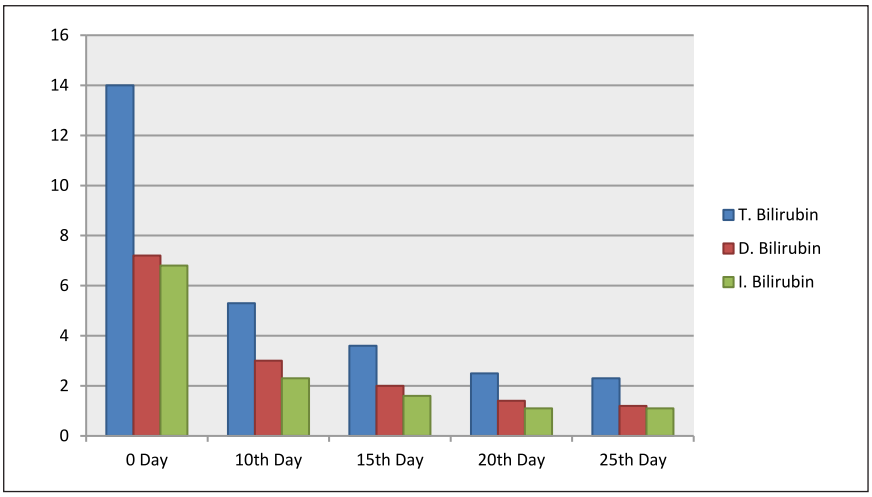
Unani name	Scientific/ English name	Part used	Quantity
Tukhm-i-Kasni	*Cichorium intybus* L.	Fruit	112.50 mg
Barg-i-Jhao	*Tamarix gallica* L.	Leaf	225 mg
Mako Khushk	*Solanum nigrum* L.	Fruit	112.50 mg
Majeeth	*Rubia cordifolia* L.	Stem	112.50 mg
Revand Chini	*Rheum emodi* Wall. ex Meissn	Rhizome	168.75 mg
Barg-i-Kasondi	*Senna occidentalis* (L.) Link	Leaf	168.75 mg
Barg-i-Sanbhalu	*Vitex negundo* L.	Leaf	56.25 mg
Badiyan	*Foeniculum vulgare* Mill.	Seed	112.50 mg
Tukhm-i-Kasoos	*Cuscuta reflexa* Roxb.	Seed	112.50 mg
Biskhapra	*Trianthema portulacastrum* L.	Leaf	56.25 mg
Bao Khamba	*Careya arborea* Roxb.	Bark	112.50 mg
Barg-i-Bartang	*Plantago major* L.	Leaf	46.87 mg
Gul-i-Surkh	*Rosa damascena* Mill.	Petals	140.60 mg
Kateli Khurd	*Solanum xanthocarpum* Schrad. &Wendl	Fruit	140.60 mg
FilfilSiyah	*Piper nigrum* L.	Fruit	50.62 mg
Naushadar	*Amonium chloride*	Crystal	468.75 mg
Kushta Jast	Calx of Zinc oxide	----	15 mg
Sugar	*Saccharum officinarum* L.	----	Q. S.

Assessment of efficacy

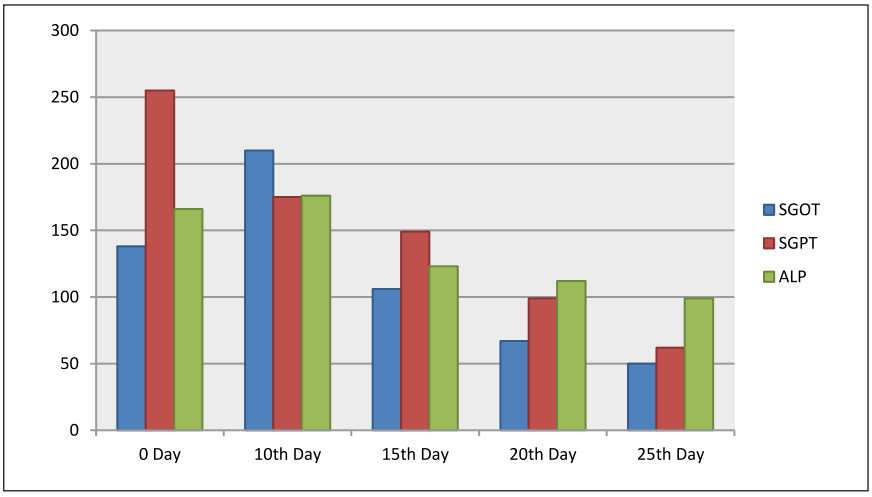
The patient was assessed through subjective and objective parameters. The clinical observation was done daily during round taken in the ward while the objective parameters like liver function tests were carried out at baseline, 10th, 15th, 20th and 25th day.

Observations and outcome

During clinical follow-ups, it was observed that the clinical features such as nausea, vomiting and fever were subsided gradually. The appetite of the patient was also improved after 7 days of the treatment. The body temperature became normal on 3rd day of the admission of the patient. The abdominal tenderness was not found from 7th day of the treatment. The yellowish discoloration of the sclera started to reduce from 7th day of the treatment. On 10th day of the treatment, the blood sample of the patient was taken for liver function tests in which the total bilirubin, direct bilirubin, indirect bilirubin, SGOT, SGPT and ALP values were found to be 5.3 mg/dL, 3 mg/dL, 2.3 mg/dL 210 U/L, 175 U/L and 176 U/L, respectively. On 15th day, again these parameters were evaluated wherein the total bilirubin, direct bilirubin, indirect bilirubin SGOT, SGPT and ALP values were 3.6 mg/dL, 2 mg/dL, 1.6 mg/dL, 106 U/L, 149 U/L, and 123 U/L, respectively. On 20thday of the treatment, total bilirubin, direct bilirubin indirect bilirubin, SGOT, SGPT and ALP values were recorded as 2.5 mg/dL, 1.4 mg/dL, 1.1 mg/dL, 67 U/L, 99 U/L, and 112 U/L, respectively. On 25th day of the treatment, total bilirubin, direct bilirubin, indirect bilirubin, SGOT, SGPT and ALP values were estimated as 2.3 mg/dL, 1.2 mg/dL, 1.1 mg/dL, 50 U/L, 62 U/L, and 99 U/L, respectively. (Graph 1 & 2)



Graph 1: Effect of Unani regimen on liver function test [Serum Bilirubin (Total, Direct & Indirect)].



Graph 2: Effect of Unani regimen on liver function test (SGOT, SGPT & ALP).

DISCUSSION

The present case report revealed that the Unani regimen comprising *Ma'jun Dabid al-Ward, Araq-i-Mako, Araq-i-Kasni* and syrup *Jigreen* produced significant hepatoprotective and anti-inflammatory effects as evident from reduction of serum liver biomarkers in a patient suffering from jaundice which might be due to acute hepatitis viruses. In this case, *Sharbat-i-Khaksi* as anti-pyretic and *Habb-i-Tursh Mushtahi* as appetizer were given to the patient. *Sharbat-i-Khaksi* is one of the important Unani pharmacopoeial compound drugs in the form of syrup which is considered as the drug of choice for fever.[7] A study revealed that the chief ingredient of this preparation namely *Sisymbrium irio* produced significant anti-pyretic effect against yeast-induced pyrexia in experimental animals.[17] *Ma'jun Dabid al-Ward*[16] and syrup *Jigreen* are considered as the drug of choice for liver ailments. Shakya et al, 2012 has reported that *Ma'jun Dabid al-Ward* promisingly produced hepatoprotective and antioxidant activities in dose dependent manner against CCl_4-induced hepatic toxicity in Swiss albino mice.[18] A study has reported that syrup *Jigreen* along with other medicines and venesection produced significant curative effect in a patient of hepatitis B.[19] The important ingredients of these formulations like *Nardostachys jatamansi*, *Pistacia lentiscus*, *Crocus sativus*, *Cinnamomum zeylanicum*, *Cymbopogon jwarancusa*, *Saussurea lappa*, *Cuscuta reflexa*, *Cichorium intybus*, *Aristolochia rotunda* and *Rheum emodi* produce resolvent, deobstruent and hepatoprotective actions.[20] Ali et al, 2000 revealed that the ethanolic extract of *Nardostachys jatamansi* rhizome significantly reduced the raised levels of serum transaminases and alkaline phosphatase in thioacetamide-induced liver injury in rats.[21] Omidi et al, 2014 evaluated the hepatoprotective effects of the extract obtained from the petals of *Crocus sativus* in acetaminophen-induced hepatic toxicity in experimental animals as evident with noteworthy reduction of the raised levels of SGOT, SGPT, ALP, bilirubin, total protein and albumin in the treatment group as compared to that of control animals.[22] Rakesh et al, 2020 has reported that the aqueous and alcoholic extracts of *Cuscuta reflexa* produced remarkable hepatoprotective activity against CCl_4-induced liver toxicity in rats.[23] Edi et al, 2012 reported the potential hepatoprotective activity of ethanolic extract prepared from cinnamon bark against CCl_4-induced hepatic toxicity in Wistar rats.[24] Ansari et al, 2021 revealed that the hydro-alcoholic extract obtained from the root of *Aristolochia rotunda* significantly reduced the higher levels of liver biomarkers such as bilirubin, SGOT, SGPT and ALP, and improved the histoarchitecture of liver in diseased rats.[25] Urfi et al, 2018 reported that the leaves extract of *Tamarix gallica* showed significant hepatoprotective activity against rifampicin plus isoniazid-induced liver toxicity in Sprague-Dawley rats.[26] *Araq-i-Mako* and *Araq-i-Kasni* are distillate of *Solanum nigrum* and *Cichorium intybus*, respectively, and generally prescribed as vehicle along with *Ma'jun Dabid al-Ward* in the treatment of liver diseases.[27] *Araq-i-Mako* is separately used as resolvent, deobstruent, diuretic, analgesic, antiphlogistic in the treatment of various ailments.[6] Subhash et al, 2011 has reported the potential hepatoprotective activity of extracts of *Solanum nigrum* and *Cichorium intybus* in CCl_4-induced hepatic injury in rats.[28] The inflammation of liver was probably subsided due to the anti-inflammatory, antioxidant, hepatoprotective and synergistic activities of a combined regimen used in this case as evident with normalization of liver biomarkers.

CONCLUSION

The polyherbal Unani regimen comprising *Ma'jun Dabid al-Ward,* syrup *Jigreen, Araq-i-Mako, Araq-i-Kasni* has the potential in gradually mitigating all the clinical features and bringing towards normalcy raised levels of serum bilirubin, SGOT, SGPT, ALP at the end of treatment in the patient. These drugs are widely used in the treatment of liver diseases in Unani medicine. This documented evidence obtained from this case report further revealed the efficacy of these time-tested drugs of Unani system in the treatment of jaundice. Such types of evidences will be helpful to encourage the common people as well as scientific community for the use and acceptance of Unani medicine in this scientific era. But, more robust data has to be generated from clinical trials for the wider acceptance of Unani system of medicine at global level.

Declaration of patient consent

The written consent was taken from the patient to publish his case in the journal. In the consent form, the patient was given his consent for clinical information to be reported in the journal. The patient understand that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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