Pulmonary tuberculosis and its management in classical Unani literature

Shakir Jamil*, Azhar Jabeen and Shoaib Ahmad1
Faculty of Medicine (Unani), Jamia Hamdard, New Delhi 110062
1437, Sector 39 B, Chandigarh 160036

Received 19 November 2003; revised 1 December 2004

Tuberculosis is the leading cause of death in the world from a single infectious disease and represents more than a quarter of the world's preventable deaths. *Mycobacterium tuberculosis* is the etiologic agent of tuberculosis (TB) in humans. Transmission of TB occurs primarily by the aerosol route but can also occur through the gastrointestinal tract. Coughing by people with active TB produces droplet nuclei containing infectious organisms which can remain suspended in the air for several hours. Infection occurs if inhalation of these droplets results in the organism reaching the alveoli of the lungs. Since administration of a single drug often leads to the development of a bacterial population resistant to that drug, effective regimens for the treatment of TB contain multiple drugs to which the organisms are susceptible. Tuberculosis is usually treated with four different antimicrobial agents. The paper reviews the disease and treatment known to ancient Unani physicians. Pathophysiology and pathogenesis of pulmonary tuberculosis have been elaborately discussed. Attempts have been made to correlate and interpret the views of ancient Unani physicians with the modern concept.

Keywords: Unani Drugs, Tuberculosis, Pulmonary Tuberculosis, Unani System of Medicine.

IPC Int. Cl.7: A61K35/78; A61P31/06; A61P31/10

Tuberculosis (caused by *Mycobacterium tuberculosis*) is one of the deadliest diseases in the world. *Mycobacterium* (Fig. 1) kills more people than any other single infectious agent. Tuberculosis an infectious disease primarily of lungs (pulmonary tuberculosis) with social bias has always occurred disproportionately among disadvantaged population such as the homeless malnourished and over crowded. Approximately 1.7 billion population (about one-third of the world population) are infected with *M. tuberculosis*. Despite the availability of effective chemotherapy, 10.2 million new tuberculosis cases and 3.5 million tuberculosis deaths occur each year. More than 95% of deaths occur in developing countries where tuberculosis accounts for 6.7% of all deaths. In addition to this human cost, the concentration of the disease among the youth makes tuberculosis a major socio-economic burden. In this background, World Health Organization in 1993 declared tuberculosis a global emergency1.

The ancient Unani literature has numerous citations on pulmonary tuberculosis. Since the time of Hippocrates (460 B C) the occurrence of the disease is characterized by fever, wasting, cough and expectoration. The ancient Unani physicians termed the tuberculosis as *Sil* and *Dique* and described tuberculosis under both headings separately maintaining the uniformity in terminology and nomenclature. *Sil* and *Dique*, terms are considered synonyms, *Sil* being emaciation and *Dique* the low-grade fever (the cardinal symptoms of the disease)1. *Sil* has been defined as a disease in which the organs become lean and thin and may be with or without ulcer (*Qarha*). *Sil* with ulcer is called *huma-e-dique* (tubercular fever)2.

Majority of Unani physicians diagnose *Sil* (pulmonary tuberculosis) as a lung ulcer accompanied

*Corresponding author

Fig.1 Electron micrograph of *M. tuberculosis*
by *Dique* (tubercular fever). Some physicians opine that *Sil* applies for both lung ulcer (Qarha revi) as well as *Huma-e-dique* (tuberculosis). *Sil* is an ulcer, which may occur in lungs followed by *Dique* while in others view, *Dique* is *Huma* (fever) and stays in the body so much so that the fluids of the body get destroyed by its heat. *Dique* may be due to the heart temperature, which destroys the fluids from the organs. *Sil* has been mentioned as exudation, exit and becoming naked. It is called *Sil*, since bones become prominent due to wasting and emaciation of muscles. Body affected by the disease loses its muscles to a great extent there by reducing the body to a skeleton equated with unsheathed sword (saff-i-maslool). Qarshi mentioned that this disease is a compound one in which the presence of fever is must. *Sil* is also defined as a special type of ulcer caused by a specific type of *Madda*.

*Sil* has also been described as wasting because emaciation is a special characteristic of this disease and ulcer means disruption and discontinuity of muscles and formation of pus. The symptoms of the disease are due to ulceration of lungs. The patient suffers from fever and expectorates pus with cough. Lungs are injured in *sil*.

Some Unani physicians introduced the word *Aqtiqoos* as another synonym of *sil* and have also mentioned the fever *Dique* as *Aqtiqoos*. *Dique* means softness and leanness. It acquired its name as it is a low-grade fever tends towards leanness. *Dique* and *sil* are in fact two names of the same disease. Buqrat (460 BC), the father of medicine also believed these names as synonymous. *Huma-dique* is unusual and unnatural temperature which gradually damages the organs of the body (*Aaza asliya*) and destroys the fluids secreted by the body.

Classical Unani physicians have separately described *Sil* and *Dique* but they have practically treated the two terms as synonyms. The physicians in general have treated *Sil* as a lung ulcer which is necessarily accompanied by *Dique*. Allama Qarshi has defined *Sil* as a sum of the lung ulcer and *Dique* (fever). *Tadarun*, another name for *Sil* or *Dique* also is a synonym. The term however is not found in old Unani literature. The equivalent of this disease in modern medicine is tuberculosis. Tuberculosis has been derived from the word tubercle as this disease is characterized by formation of tubercle lesions. The Unani scholars of this era have introduced the term *Tadarun* which literally means tuberculosis. So *Tadarun-e-revi* means pulmonary tuberculosis.

**Pathophysiology:**

Unani physicians define *Huma-e-dique* as fever in which the abnormal heat (*Hararat gariba*) is initially related to vital organs (*Aaza asliya*) with reference to heart. It slowly and steadily destroys the fluids of the body. Majoosi and Ibn-e- Sina have classified this fever (*Huma Dique*) into three stages so for as its transference from one fluid to another one is concerned. In the first stage this abnormal heat annihilates the fluids present at the ends of capillaries and starts annihilating the fluids found in the fissures of the organs and their spaces. First stage is understood simply as *Dique* or *Dique mutlaq* (absolute *Dique*). Some worker found it extremely difficult to diagnose tuberculosis at this stage though the treatment is possible.

According to some scholars it is the second stage when the heat (*Hararat gariba*) has completely annihilated the fluid present in the fissures of the organs and is about to affect the fluid by which the organs are interconnected with each other. This stage is known as *Zabool* (wasting). Some scholars describe the stage of *Zabool* as *Farlimoos* and found the treatment at this stage very difficult.

In the third stage when the second stage fluids have already annihilated and third stage fluids have started being affected by heat i.e. those fluids which are obtained from the elements at the time of birth. This fluid is also called *Ratoobat USTAQSIYA* and *Ratoobat MANVIYA*. *Ratoobat Manviya* due to which the elements of the individual organs are interconnected since birth. By the annihilation of this fluid the elements of organs are turned into pieces. Ibn-e-Sina mentioned this stage of tuberculosis as *Muffatiit* and *Muhashif* (disintegration).

Some ancient physicians are of the opinion that when the temperament of heart shows a change but the fluids are yet to be dissolved this is the first stage. When fluids get annihilated this is the second stage. In the third stage the heat shows its effect on the arteries, veins, membranes and individual organs.
According to Unani System of Medicine Soo-e-mizaj (derangement of the temperament) mostly due to disequilibrium in the quantity or quality of Akhlat (fluids of the body) and disturbance in the Ashab-e-sittah zarooriah (six essential causes for good health) are the main etiological factors in most of the diseases.

The Unani physicians have divided body into three parts: Ada (organs), Akhlat (humours) and Arwah (pneuma). These parts of the body are the seats for the diseases. Fever is an abnormal temperature (Hararat-e-gair tabai) which effects and is seated in any of the three parts namely Ada, Akhlat and Arwah. According to Ibne-Sina this abnormal heat (Hararat gariba) strikes Aaza (organs) and gets seated into the organs; it produces a kind of fever called as Huma-i-dique (tubercular fever).

Causes of Dique have been described as:
1. Ashab sabiqa (preceeding causes).
2. Ashab badiya (extrinsic causes).

Regarding the etiology of Huma-e-dique Dique is caused due to ashab sabiqa like Huma-e-uffonat (infections), Huma-e-murakaba (compound fever), warm sadar, chronic fever and Huma-e-youm. Chronic fevers are responsible for the destruction of the body fluids, leading to Dique. Ashab sabiqa and Ashab badiya like anxiety, frightening, awaking, malnutrition, and rage are mentioned as hot and dry temperament. Huma-dique does not occur directly in the body it follows Huma-youm or it occurs to those people who are susceptible or who indulge in strenuous work or those people who take very low diet or plenty of hot and dry medicines. Some of the scholars are of the opinion that Dique fever occurs after attack of some other fever in the body.

Four disorders in the body have been described, which can lead to Dique, if not managed properly:
1. Sue-e-mizaj maddi (derangement of temperament with morbid material).
2. Diseases of the kidney.
4. Ziabetes (Diabetes mellitus).

Sil rewi (Pulmonary tuberculosis):
Different authorities of Unani medicine have described the causative factors for Sil rewi as:

- Insibab-e-nazla (descending of catarrhal discharge) which is irritant and corrosive and causes infection descends from head and falls upon lungs.
- Similar type of acute and corrosive substance, which falls upon the lungs from any organ other than brain.
- Pneumonia when not resolved causes ulcer.
- Zatul jamb (pleuritis) or Zatus sadar, when not resolved, rupture of the lung vessels.
- Auto infection (primary infection) and corrosion of lung mass.

Some scholars like Ibne Sina believed that lean, weak, pigeon-chested persons with excessive bile and the persons between 18 and 30 years of age are susceptible. There is an increased incidence of the disease at cold places and in those persons who generally suffer from cold (Nazla) and their mouth have starfish smell. Sil is an infectious disease and it communicates from one person to another. This disease is transmitted even if a person sits near the patient and if one inhales the breath of the patient.

It is clearly understood while going through the above discussion that alteration in the quantity or quality of Akhlat is the basic concept of the disease and disturbance in the Ashab-e-sitta daruriya alongwith alteration of Akhlat is the main etiology of the diseases in Unani medicine. The Ashab-e-sitta daruriya consist of external and internal factors. The first two of the Ashab-e-Sitta daruriya are atmospheric air, food and drinks. Unani physicians have also divided the causes of Sil and Dique into Sabiqa and Badiya. Sabiqa causes are Huma (fevers) like Huma-e-uffiunat (infections), Huma-e-murakkaba (compound fever), chronic fever, Huma-e-youm (day fever), pneumonia, pleuritis, autoinfections. Badiya are extrinsic causes like anxiety, malnutrition, and hot and dry temperament. They have also given emphasis on predisposing factors like diabetes, malnutrition, any chronic disease and environmental factors like congested areas crowded places and lack of fresh air. It has also been believed that whenever change occurs either in air or in water and get contaminated they cause Uffonat of akhlaat (sepsis of humors) and thus causing the disease.

Some physicians not only described the putrification of water and air but also named the substances which cause putrification as Ajsame Ardiyah Khbitha (Microorganisms, becoming the first one to give idea regarding the existence of these organisms, which pollute water and air. These substances after invasion cause infection (Tadiya).
Similarly Unani physicians have also described the *Tadiya* and *Waba* (epidemic) in their texts$^{17}$. *Sil* has been considered as an infectious and communicable disease.$^{4,15,18}$ Earlier Unani physicians had a concept about the infectious nature of the disease, *Sil* and the causing agent *Ajsame Khabitha* (microorganisms).

**Symptoms and signs**

Pulse is subtle, firm, continuous and weak. Fever is continuous till morning. Fever is constant and due to the gradual change in temperament (*Sue-mizaj mustavi*) the patient does not feel the intensity of fever. Temperature rises after meals and pulse tends to be stronger. The fever does not subside even after three or more days and is of low grade and does not have the symptoms of infectious fever like chills, rigors, thirst, irritability, dryness of tongue and foul smelling urine.

The patient becomes lean and thin. Body skin is dry and thin. Face turns pale and eyes sink. The facial bones become prominent and bones and skin come in contact due to wasting. Both temporal sink.

Clinical features include:

- Purulent expectoration.
- Blooded sputum with cough.
- *Huma-dique* (tubercular fever).

Sputum contains dry fibrous tissue, emaciation of the body, night sweating, nails become curved and hair starts falling, ribs start protruding out leading to loss of appetite. In autumn season the pulmonary tuberculosis patient's condition becomes more conspicuous and diagnosis becomes easier.

**Management of Pulmonary Tuberculosis**

The general constitutional treatments that have been advocated through centuries by Unani physicians were targeted to improve the resistance of the patient to combat successfully the disease pathology.

Unani physicians of earlier centuries mentioned that, it could be controlled in the initial stage$^{3}$. When purulent expectoration is due to *Sil* its treatment is very difficult due to the following reasons:

1. Timid and spongy lungs and thin blood vessels leads to longer healing time for ulcers.
2. The drugs loose their potency as they cover a long distance to reach lungs.
3. The ulcerated part of the lung which in fact needs rest to heal up also keeps on moving.
4. The network of blood vessels inside the lungs is comparatively wider and it takes a longer period to heal up.

It is also recorded that the childhood *Sil* generally responds better to the treatment as compared to adulthood *Sil*.

**Following principles are followed while treating a *Sil* patient:**

1. *Tajfeef qarha* (desiccation of ulcer)
2. *Ilthiam* (healing of ulcer)
3. *Tanfeeth wa tagriya* (expectoration and lubrication)
4. *Tanqiya* (cleansing of wound)
5. Strengthening of stomach
6. Stabilization of temperature
7. Diet

*Sil* is always accompanied by tubercular fever and considering the nature of *Dique*. Care is taken to give plenty of fluids keep body cool compensate deficiencies and strengthen the vital body organs. Desiccation of ulcer may be needed along with providing fluids because the treatment of ulcer is based on its desiccation.

While treating a *Sil* patient, medicines which help in desiccation are administrated. They prove an impediment to the expectoration of sputum etc. thereby aggravating the symptoms of *Dique*. However in order to overcome this problem expectorant drugs are given the ulcerous part remains moist and does not heal. The other problem is that drugs given to keep the body cool do not reach the required spot. Similarly by administering hot temperamental drugs the body temperature is increased. It necessitates that all such drugs be given in a compound form.

Liquors are administrated to provide warmth and energy to the body. Cold temperamental drugs have been recommended to be used along with hot temperamental drugs e.g. *Gurse* kafoor with *Gulgand*.$^{5}$

When attention is paid to cure the ulcer hot and dry temperamental drugs are administrated thereby causing the aggravation of fever, dryness and emaciation. However when attention is paid to control fever the ulcer does not heal up due to moisture provided by the drugs.

To overcome the difficulty the physicians at the first instance attempt to control fever. *Tabashir* (Bambusa arundincea) Gul surukh (rosa Damascus), Tukhm khayar (Cucumber seeds) Gil armani and
Kehruba (Ambreskenum) are used in the form of along with dilute curd. Following drugs namely Kundur (Boswellia serrata), Raywand (Rheum emodi), Gil makhtoom, Koukabul arz (talc), Barsami, Nishasta (starch), Kateera (Sterculia urens), samag arbi (gum Arabica), khashkhash abyad (white opium seeds), Afyoon (opium) are also to be taken. Later, Persiawshan (Adiantum capillus-veresus) has been added as an anti-inflammatory and cleanser.

Following management for pulmonary tuberculosis (Sil) has also been suggested:

- Donkey’s milk, goat’s milk and protein rich diet like meat of birds.
- Hammame Moatadil and Aabzan (Sitz bath).
- Powder of following medicines: Tabasheer, Acacia arabica gum (Samagh-e-Arbi), Armeniam Bole (Habbul Aas), Persiawshan, kundur, Punica granatum (Gulnar).

In the context of Dique some physician has even mentioned the management of Humma-e-Dique with its different stages.

First Stage: If the symptoms of Dique are mild (fever, weakness and dryness of the body are mild) then it is first stage of Humma-e-Dique. The patient should be given barley water (Aashe Jao), fish kebab and other vegetables like Khurfa (Portulaca oleracea), Kanocha, Kadu (Cucurbita moschata), etc.

Second Stage: If Humma-e-Dique progresses into second stage (Sanvi darja) and moderate weakness is present then the above mentioned management should include Aashe Jao, Hammam along with donkey’s milk, goat’s milk, Qurs-Tabasheer, Maaul leham (meat water), etc.

Third Stage: If Humma-e-Dique progresses into third stage the patient is emaciated and is extremely weak then easily digestible food should be given e.g. soup of bird meat, chicken soup, etc. However in this stage recovery is very difficult.

Following management for tuberculosis has also been mentioned:

- Crabs boiled with Maul Shair (Barley water, Hordeum vulgare).
- Egg yolk, chicken, almond oil.
- Sitz bath followed by massage with Roghan Banafsha (oil of sweet violet, Viola odorata).

Some physicians have advised for mucolytic and desiccant drugs for ulcers and suggested the use of diuretics to keep the ulcer dry. Most of the Unani physicians advised for drinking milk preferably donkey's milk as it supposedly cleans the ulcer rehydrates body and increases the body resistance to combat the disease. Most of the Unani physicians mentioned human milk to be most useful in Sil followed by milk of donkey and goat.

Some Unani physicians have even mentioned the following medicines and prescriptions for the treatment of tuberculosis:

Cough with haemoptysis:

Formulation: Geru (Bole rubra), Sang Jarahat (Soap stone), Dammul Akhwain or Dragon’s blood (Dracaena cinnebari), Nakhud Sokhta or roasted gram (Cicer arietinum), Rubbus Soos or extract of liquorice (Glycyrrhiza glabra), Samagi Arabi. Kateera 1 gm each. Fine powder of these drugs is mixed with 20 gm of Khameera Khashkhash and the mixture is divided into two parts; one part is to be taken in the morning and the other one in the evening. After that decoction of Behidana or Quince seeds (Cydonia oblonga) (3 gm), Unnab (Zizyphus vulgaris) (5 Nos.), and Sapistan (9 Nos.) mixed with Sharbat Banafsha (20 ml). Alternatively the following prescription may be used: Roasted crab (150 gm), Rubbus Soos, Gond Babool (Acacia senegal), Kateera, Banslochan or bamboo manna (Bambusa arundinacea), Dana ilaichi Khurd (Elettaria cardamomum), Saresham Mahi, Sat gilo, (Extract of Tinospora cordifolia), Kahrubai Shamai or Ambar (Pinus Succinifera) 500 gm each. Fine powder of these drugs is mixed with 20 ml of Sharbat Khashkhash.

Nuxsa Gariu-samak: Saresham (2 gm), and Misri (20 gm) and is taken after boiling in 100 ml milk.

Dabai-Kibreet: Gandhak Amla Saar (sulphur) (1 gm) finely powdered and is taken with Sharbat Aijaz (10 ml) or Khameera Khashkhash (10 ml) or Lauooq Sapistan (20 mg).

Dawai-Khurfa-Naushadar (Profuse haemoptysis): Tukhm-khurfa (2 gm) and Naushadar (Sal ammoniac) (6 gm) are taken in an earthen pot its mouth is closed by Fuller’s earth and put on the flame/heat of Pachak Dashti for one hour; 450 gm out of it is taken after mixing with Sharbat Anjihar. If it causes se motions then Qurs Tabasheer Kafaori (5 gm) is given with Sharbat Habbul Aas (20 ml) or Sharbat Khashkhash (20 ml).

Effective/useful compound formulations

Sharbat Faryadras, Sharbat Aijaz, Qurs Sartan Sadah anf Kafaori, Qurs Kafaor, Dayaquzah, Gulgand, etc.

Tabreed (Cooling) and Tarteeb (Wettting)
Following has been recommended in the treatment of Dique:

Sitz bath in lukewarm water or other liquids followed by application of Roghan Banafsa (oil of sweet violet, *Viola odorata*). Cold and moist vegetables like Khurfa, Khubbazi or Common mallow (*Malva sylvestris*), Kahu (lettuce) leaves (*Lactuca sativa*), Kaddu, Kheera or cucumber (*Cucumis sativus*), fish and chicken meat. Application of cold Tila on chest like sandal, *Gulab*, Khurfa, *Aab Dhania Sabz* or water of green coriander (*Coriandrum sativum*).

Mamoolate-Matab (Clinical prescriptions)

- For nutrition of the body *Dawai-Dique* is given along with goat milk in the morning. (Ingredients of *Dawai-Dique*: Baladur Mudabbar or Marking nut (*Semecarpus anacardium*), Sat Gilo, Tabasheer, Ilaichi Khurd and Filfil Siyah or Black pepper (*Piper nigrum*) (1 gm each, finely powdered).

- In the evening 1 *Qurs Tabasheer* is given followed by Gilo Sabz, Astussoos, Tukhm Khayyarain (3 gm each) in Arq Hara Bhara (60 ml) and Arq Sheer (60 ml) mixed with Sharbat Neelofar (20 ml). Donkey milk, goat milk, Kaddu water or watermelon (*Citrus vulgaris*) (70 ml) is given for first three days, increasing 10 ml each day till it reaches 210 ml, thereafter 10 ml is decreased each day till it reaches again to 70 ml.

- *Dawai-Dique* is given along with donkey milk or goat milk in the same way. If too much weakness is present compounds of iron, gold or copper is given. Loab-Behidana or Quince seeds (*Cydonia oblonga*) (3 Nos.), Sheera Maghz Kadu (3 Nos.), Sheera Magz Tukhm Tarbooz or watermelon seeds (*Citrus vulgaris*) (3 Nos.), Sheera Tukhm Khurfa Khurfa or Purslane seeds (*Portulaca oleracea*) (3 Nos.) are given along with Sharbat Neelofar (20 ml). *Qurs Tabasheer* and *Qurs Kafoor* (Pharmacopoeal preparations) may also be given.

- *Qurs Tabasheer* and *Qurs Kafoor* (Pharmacopoeal preparations) may also be given.

- Honey and honey water have been recommended to clean the lung ulcers purulent expectoration and for tuberculosis.

- Dry air is also useful in healing of ulcers. Patients are advised to live in dry places.

- Venesection of head and face is recommended for physically strong patients. After venesection purgative of Amaltas (*Cassia fistula*) with Turangbeen (Manna) is recommended. Decoction of unah, sapistan (*Cordia latifolia*), maveez (*Vitis vinefera*) and banafsha may be administered thereafter. Strong purgatives like turbud (*Operculina turpethum*), gariqoon (*Polyorous officinalis*) should never be administered. Some has even recommended cupping in case venesection is contraindicated.

- Rose oil and khari oil massage on chest are recommended. Pumpkin oil, opium oil, neelofer (*Nymphaea lotus*) oil, banafsha oil for body massage followed by bath along with goat milk in case the body is dry and lean.

**Turkish Bath**

- Razi advises bath with lukewarm water before and after meals. Ibn sena recommends it before meals. Majoosi has advised for oil massage after the bath.

**Diet**

- Razi advises fish, bird’s flesh, barley water and rose water. Majoosi also recommends chicken and teehu meat, moong pulse in the form of asfaidbaj (a form of soup prepared from chicken or other soft meat and vegetables, cereals, etc.). Ibn-e-Sina favors fat free soft meat, fish and pulses (avoid the fish in malignancy). Azam stresses the use of sarisham mahi (Isinglass).

**Treatment**

**Hyperthermia**

- Ibn-e-Sina recomends hot temperamental seeds like *Tukhm anisoon* (*Pimpinella anisum* seeds), r*Rb-u-soos, persiawshan* in the form of syrup. He has also suggested barley husk cooked with crab for pyrexia. Razi advises *Qurs-e-tabasheer* and *Qurse kafoor* and massage of sandal, camphor and rose water on chest.

**Cough**

- Majoosi recommends cough suppressants as cough proves an impediment to the healing of the ulcer. White opium seeds, gum, starch, *Kateera, Tabasheer* (*Bambusa arundinacea*), *Rabu-soos* is useful for both ulcer and cough. This is to be followed by drinking opium syrup or grape syrup. Ibn-Zaheer recommends *Aslasoos*. Majoosi advises chewable tablets made from *Magz tukhm kaddu* (guard seeds), cucumber seeds, melon seeds, behdana, opium seeds, *Tukhm khurfa*, gum, *Kateera, Tabasheer* and sugar. Jurjani recommends *Kahu* (*Lactuca sativa*) seeds after being cooked in barley water. He also recommends *Sharbat zoofa* (*Hyssopus officinalis*) as expectorant.
Haemoptysis

Tabri advises curd milk from which cream is removed and hot iron pieces are added to it and cooked. Razi and Jurjani recommend gil makhtoom (Bolus makhtoom), nishasta (starch), gul surskh, kehruba (Ambreskenum), habul aas, grinded crab, tukhm banafsha, kateera, tabasheer, gum, asalasoos, in the form of tablets.

Apart from mucolytic desiccants and healing agents Unani physicians have given stress on usage of crab, milk, fish, barley and honey, etc. Crab and barley water are considered very effective in tuberculosis and most of the physicians have mentioned its usage in tuberculosis. Unani physicians have emphasized on the improvement of the resistance of the patient to combat successfully the disease. For this reason they have given more stress on nutritious diet especially protein rich diet.

Acknowledgement

Authors are thankful to Panacea Biotech Ltd., New Delhi for providing a fellowship to one of the authors (AJ) for “A Study on Management of tuberculosis with a Herbal Unani Product (Lawsonia inermis) as an Adjuvant Drug” and also to Jamia Hamdard, New Delhi for providing the clinical facilities for carrying out the studies at its Majeedia Hospital, New Delhi.

References

9 Ajmali M M, Bukharona ka ilaj, (Daftar Maseehul Mulk, Delhi), 1950, 325-333.
11 Karim N M, Shaful Auraz wa Muazunul Ilaj, (Munshi Naval Kishore, Lucknow), 640-646.
15 Ibne Sina, Al Qanoon, (Munshi Naval Kishore, Lucknow), 1931, 100.
16 Qutubuddin, Al-Aqsarai, (Munshi Naval Kishore, Lucknow), 67-71.
19 Ibn-e Zaher, Kitabul Taiseer, (Central Council for Research in Unani Medicine, New Delhi), 1986, 100-104.