



Contents lists available at ScienceDirect

## Journal of Ayurveda and Integrative Medicine

journal homepage: <http://elsevier.com/locate/jaim>

## Review Article

Unani approaches to the method of formulating a *Murakkab* (compound drug formulation)Monis Mohd <sup>a,\*</sup>, G. Sofi <sup>b</sup>, Nasreen Jahan <sup>b</sup>, Zarreen Baig <sup>c</sup><sup>a</sup> Department of Pharmacology, Jamia Tibbiya Deoband, 247554, India<sup>b</sup> Department of Pharmacology, NIUM, Bangalore, 560091, India<sup>c</sup> Department of PSM, AKTC, AMU, Aligarh, 202002, India

## ARTICLE INFO

## Article history:

Received 10 March 2017

Received in revised form

18 April 2017

Accepted 19 April 2017

Available online xxx

## Keywords:

Compound formulations

Mizaj

Treatment strategy

Formulating *Murakkab*

## ABSTRACT

*Murakkab* drugs of Unani medicine have remained an important aspect of disease treatment since antiquity. Physicians prepared different formulations for various diseases. The formulations thus prepared have always been of two categories. One category of *Murakkab* drugs was those which were formulated empirically and remained in use without conceptual framework behind these formulations. These formulations were categorized as *Mujarrab* (tested) formulations. The other category of formulations was prepared in consideration with theoretical framework of *Mizaj* (temperament) and *Usoole ilaj* (treatment strategy) and then tested by physicians. This category forms a large chunk of formulations in the formulary sections of the literature of Unani medicine. Present paper explores various approaches for formulating *Murakkab* drugs of the second category keeping in view the actions of the ingredients of the drug formulation, and treatment strategy of the disease for which the formulation was prepared. It elucidates the approaches of formulating compound drug formulations with the logic of including various individual ingredients. The study exemplifies two compound formulations to illustrate the approaches used to formulate compound formulations of Unani medicine.

© 2017 Transdisciplinary University, Bangalore and World Ayurveda Foundation. Publishing Services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1. Introduction

Unani medicine is an ancient system of medicine originated from Greece and was developed during the Arab civilization. It was the Greek philosopher and physician- Hippocrates, on whose teachings the theoretical framework of medicine is based. After him a number of other Greek scholars enriched the system considerably. Of them Galen stands out as the one who stabilized its foundation, on which Arab physicians like Razi and Avicenna constructed the imposing edifice [1]. According to basic concepts of Unani medicine there is a power of self preservation and/or adjustment in an individual which is called defense constitution which gets affected in diseased conditions and needs restoration to normal by the use of various therapies prescribed in the system [2]. Unani medicine strives to find out the best possible ways by which a person can lead to a healthy life.

There are four types of therapies, described in Unani literature, for maintaining health and treating disease. These are *Ilaj bit-tadbeer* (Regimental therapy), *Ilaj bil-ghiza*, (Dietotherapy), *Ilaj bid-dawa* (Pharmacotherapy) and *Ilaj bil-jarहत* (Surgery) [3]. *Ilaj bit-tadbeer* mainly consists of non-pharmacological procedures like *Riyazat* (exercise), *Dalak* (massage), *Hamam* (Turkish bath), *Taa-leeq* (leeching), *Hijamah* (cupping), etc. *Ilaj bil-ghiza* is based on recommendation/restriction of various diets that suit a disease condition. Pharmacotherapy involves administration of drugs to correct the disease [4].

The drugs employed are mainly derived from plants; some are from animals and a few of mineral origin [5]. Both single crude drugs and compound preparations are used for the treatment purpose. Single drugs or their combinations in raw form are preferred over compound formations [6]. Most of the naturally occurring drugs used in this system are safe for human use, while drugs that are toxic in crude form are first processed and purified in many ways before use so as to make them safer [7]. Other traditional medicines also emphasize on use of polyherbal formulations with specific guidelines. According to Chinese medicine, strategic combination of different ingredients of herbs is necessary to

\* Corresponding author.

E-mail address: [moniskhanamu@gmail.com](mailto:moniskhanamu@gmail.com) (M. Mohd).

Peer review under responsibility of Transdisciplinary University, Bangalore.

<http://dx.doi.org/10.1016/j.jaim.2017.04.008>0975-9476/© 2017 Transdisciplinary University, Bangalore and World Ayurveda Foundation. Publishing Services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

generate specific and synergistic effects. Single herbs prescriptions are called *Danfang* while multiple herb prescriptions are called *Fufang*. *Fufang* are much more commonly used than *Danfang*, which are thought to synergize the therapeutic effects of different ingredients and minimize their toxicities [8,9].

The treatment through Unani drugs has been rationalized in the manner that if single drug is not adequate enough to treat a disease then *Murakkab* drug may be prescribed [10,11]. Use of *Murakkab* drug for treating a disease was started centuries back by Unani physicians. The principles underlying formulating a *Murakkab* have been enough detailed in the literature [12,13]. Present study explores various approaches of formulating a *Murakkab* drug for a disease. The two approaches pharmacological and the clinical approaches illustrated are not mutually exclusive, but Unani scholars have invariably held one or the other approach as basis for formulating the *Murakkab* drug formulations.

## 2. Literature Review

The approaches of formulating a Unani *Murakkab* drug was sorted out by the extensive research review from Unani literatures. A thorough analysis of these approaches of formulating a *Murakkab* was undertaken and the rules were applied to two known *Murakkab* to explore the applicability of these approaches.

### 2.1. Observations

In this study Unani literatures were surveyed for various guidelines and approaches for formulating a *Murakkab* drug. It was observed that there are two approaches of formulating *Murakkab* drugs in Unani system of medicine. *Murakkab* drugs are formulated either taking into account drug actions that are in concordance to the nature of disease along with ameliorating the safety concern of the use of these drugs as proposed by Ibne Sina; or keeping the *Usoole Ilaj* (Treatment Strategy) in perspective and choosing the single drugs to suit it [13]. The former approach henceforth will be called pharmacological approach and the later the clinical approach of formulating a *Murakkab*.

#### 2.1.1. Pharmacological approach of formulating *Murakkab* drug

Approach of formulating *Murakkab* drugs through drug actions follows the principle of *Qiyas* (Hypothesis) and was adopted and suggested by Ibne Sina, rests on the principle that base drug(s) are chosen in accordance to disease severity and derangement in

*mizaj* (Impaired Temperament) with addition of *Musleh* (Corrective) and *Badarqah* (Vehicle). According to Ibne Sina there are 2 types of single drugs in a compound formulation. In first type, single drugs which are the base drugs of a compound are termed as chief ingredients, if these base drugs are excluded from the compound the whole formula of *Murakkab* drug will be disturbed while in second type, single drugs which are added in the formulations for reasons like correctives, vehicles, manipulating rate of absorption, retaining the drug for longer time at the site of action, directing the drug towards the lesion apart from synergism or partial antagonism of drug action by these drugs [14] (Fig. 1).

The *Afa'al* (Actions) of drugs has got the primary importance and management of the disease is looked at from the basic alteration drug ingredient (s) make via its *Taseer* (Effect) on the diseased body. The *Taseer* of the drug is viewed in terms of the *Ta'deel* in *Mizaj* (Temperamental Equilibrium) through *Mizaje Uoola* (Basic Temperament), and/or *Sanvi* (Secondary Temperament). Moreover, specificity of drug action via *Zulkhassa* (Drugs with unknown mechanism of action) is also taken care as drugs specific to affected organ are invariably included in the dosage formulation.

#### 2.1.2. Clinical approach of formulating *Murakkab* drug

Approach through *Usoole Ilaj* of the disease emphasizes on selecting and combining single drugs on the basis of the treatment plan for the particular disease. This approach is described by Unani physicians in the chapter of *Ilaj wa moalijah* (Treatment) of every disease [15,16]. They prescribed and emphasized to combine some single drugs according to *Usoole Ilaj* or need of the particular disease, for which the compound drug was initially devised. According to this approach, first it is noted that for which disease this *Murakkab* drug is prepared then we go through the *Usoole Ilaj* of the particular disease and finally required single drugs are combined according to the treatment plan (Fig. 2).

These types of *Murakkab* drugs are numerous and in *Qarabadeen* (Formularies) usually they are detailed without specific names, but the prescriptions have well documented histories as same formulas are found in various *Qarabadeen* and authors have taken care for the origin also. As an example, some *habb* and *qurs* (Pills and Tablets) ascribed to Galen, Avicenna, Shareef khan etc. and are not mentioned with a specific name for the *Murakkab*.

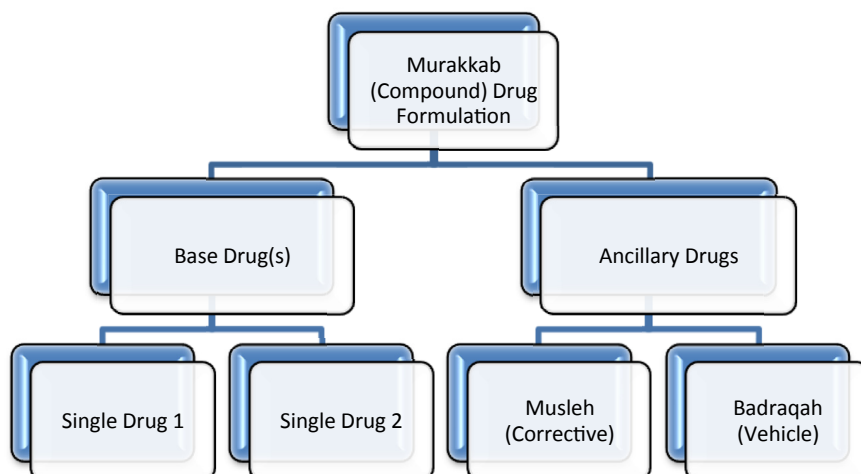


Fig. 1. Single drug selection for compound formulation through pharmacological (Ibne Sina's) approach.

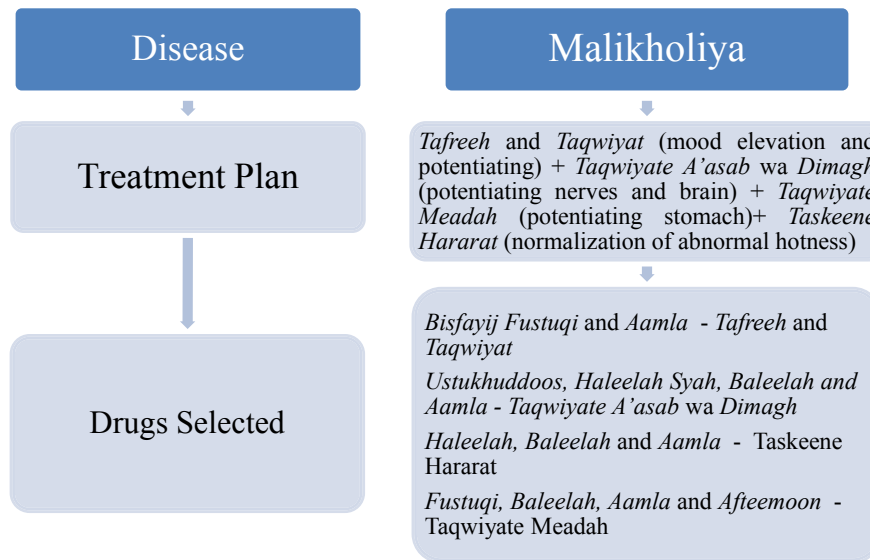


Fig. 2. Single drug selection for compound formulation through clinical approach in Unani medicine exemplifying Majoon Najah for Malikholiya.

### 3. Analysis of exemplified *Murakkab* according to the approaches of formulating a compound drug

#### 3.1. *Qurse Ghareeqoon*

This formulation has been described in the Unani literature in a precise way. The main indication is for *Warme Salabate Tihal* (Chronic Splenitis) [17]. (The ingredients are mentioned in Table 1).

##### 3.1.1. Pharmacological approach of formulating a *Murakkab*

*Ghareeqoon* (*Agaricus alba* Linn.) is selected as a base drug for *Warme Salabate Tihal* in this formulation as it has *Muhallil* (Resolvent), *Muhallile riyah* (Anti flatus), *Mufattehe sudade jigar* (removes intrahepatic obstruction), *Mulattif* (demulcent) actions, with *Haar* I degree (hot) and *Yabis* II degree (dry) *mizaj*. Drugs like *Tabasheer* (*Bambusa bambos* Druce) with *Barid* II degree and *Yabis* II degree *Mizaj*, *Gule Surkh* (*Rosa damascene* Mill) with *Barid* I degree (cold) and *Yabis* I degree *mizaj*, *Usarah Ghafis* (*Gentiana olivierii* Griseb) with *Haar* I degree and *Yabis* II degree *mizaj*, *Sumbulutteeb* (*Nardostachys jatamansi*) with *Haar* I degree and *Yabis* II degree *mizaj*, *Laakh* (*Coccus lacca*) with *Haar* II degree and *Yabis* II degree *mizaj* *Rewand Chini* (*Rheum officinale*) with *murakkab-ul-quwa* (multiple-temperament) *mizaj* and *Beekhe kibar* (*Capparis spinosa* Linn.) with *Haar* II degree and *Yabis* II degree *mizaj* are added in this formulation for their synergistic actions due to their activities of *Muhallil*, *Muqawwie Jigar* (Hepatotonic), *Muqawwie Dimagh* (brain tonic), *Mufattehe sudade jigar*, *Dafe'a Hararate jigar* (removes abnormal hotness of liver), *Mufattehe urooq* (vasodilator), *Muqatte'a* (remover), *Muhallile khanazeer* (resolves lymphadenopathy) and *Mulattife Mawad* (demulcent for morbid matters).

*Tabasheer*, *Gule Surkh* and *sumbul-ut-teeb* are also added in this formulation as *Musleh* (corrective) drugs. *Tabasheer* corrects the *mazarrat* (toxicity) produced by *sumbul-ut-teeb* while *Gule Surkh* protects testes against the *mazarrat* of *Usarah Ghafis* and *Sumbul-ut-teeb* corrects the adverse effects of *Laakh* on brain.

In this formulation drugs like *Tabasheer* and *Gule Surkh* are added for corrective reasons but these two drugs also produce *mazarrat* to *baah* (libido) and lungs. And there is no corrective drug for these two drugs in this formulation [18].

#### 3.1.2. Clinical approach of formulating a *Murakkab*

This formulation is used in *Warme Salabate Tihal*. According to *Usoole ilaj* of *Warme Salabate Tihal* following treatment plan is to be adopted in Unani medicine:

*Tadeele Mizaj* (Normalization of Temperament) + *Tahleele Mawad* (Resolving the morbid matters) + *Nuzje Mawad* (Concoction of morbid matters) + *Tabreed* (Cooling) + *Tanqiyah Mawad* (Elimination of morbid matters) [15].

*Qurse Ghareeqoon* as drug formulation for *Warme Salabate Tihal* may thus be analyzed: In case of *warme barid* (cold inflammation) drugs of *haar mizaj* are advised. All the drugs of this formulation except *Tabasheer* and *Gule Surkh* are hot in nature. For *Tahleele mawad* and dissolution of *waram* drugs having *muhallil*, *Muqatte'a*, *Mulattif* and *Mufatteh* properties are given. *Ghareeqoon*, *Tabasheer*, *Gule Surkh*, *Usarah Ghafis*, *Sumbulutteeb*, *Laakh*, *Rewand Chini* and *Beekhe Kibar* are added in this formulation for their *Muhallil* property. *Gule Surkh*, *Usarah Ghafis*, *Sumbulutteeb*, *Laakh* and *beekhe kibar* are added for their *Mufatteh* property. *Usarah Ghafis* is added for *Talteefe mawad* and *Taqtee'a Akhlat* (removes abnormal humors) properties. For *Nuzj* and *Tahleel* of *Warme Balghami* (phlegmatic inflammation), *Beekhe Kibar* is added. *Tabasheer* and *Gule Surkh* are added for *Tabreed*. *Tanqiyah Mawad* is necessary for this purpose *Ghareeqoon* is added, which is also the base drug of this formulation. And for elimination of *Safra* (bilious humour) in case of *warme safrawi* (bilious inflammation) *Gule Surkh* and *Tabasheer* are added. *Laakh* is added in this formulation for its *Munaqqie Akhlat* (purifier for humors) property.

#### 3.2. *Majoon Najah*

This formulation has been described in the Unani literature in a precise way. The main indication is for *malikholiya* (melancholia) [23–25]. (The ingredients are mentioned in Table 2).

##### 3.2.1. Pharmacological approach of formulating a *Murakkab*

*Bisfayij Fustuqi* (*Polypodium vulgare* Linn.) is selected as a base drug for *malikholiya* in this formulation as it has *Mushile Sauda* (melanogogue), *Mushile Balgham* (phlegmagogue), *Muhallile Dame Munjamid* (resolves clotted blood), *Kasire Riyah* (carminative), *Mufarreh* and *Muqawwie qalb* (cardio tonic) actions, with *Haar* I degree and *Yabis* II degree *mizaj*. Drugs like *Afteemoon Wilayati*

**Table 1**  
Analysis of ingredients of Qurse Ghareeqoon.

Ingredients	Mizaj	Afa'al	Mazarrat	Musleh
Ghareeqoon	Hot [1] Dry [2,18–20]	Mulattife Tabiyat, Muhallile Awram, Muhallile Riyah wa Nafakh, Mufattehe Sudade Jigar [18,19,21]	For Kidney, produces karb and khunaq [22]	Mastagi [18]
Tabasheer	Cold [2] Dry [2,20,23]	Muqawwie meadah, Dafe'a Hararate jigar, Muhallil, Mufarreh, Muqawwie Qalb wa jigar, Mujaffife Rutoobat, Dafe'a Qai Safrawi [19,20]	For Riyah and Baah [18,19]	Mastagi, Rubbussus [18]
Gule Surkh	Cold [1] Dry [1,18]	Muqawwie wa Mufarreh A'aza-e-raesa, Muhallile Awram, Mufattehe Sudade Jigar [18,19]	For Baah, increases thirst [22]	Aneesoon, Habbuzzalam [18,22]
UsarahGhafis	Hot [1] Dry [2,19,21]	Mulattife Mawad, Muqatte'a Akhlat, Muhallile Khanazeer, Mufattehe Urooq, Mufattehe Sudade Jigar [18,19]	For Testis [18,19]	Gule Surkh, Mastagi [18,19]
Sumbulutteeb	Hot [1] Dry [2,16,20]	Mufatteh, muhallil, Muqawwie Kabid, Mufattehe Sudad, Muqawwie Dimagh, Mujaffife Rutoobat [16,20]	For Kidney [16,17]	Tabasheer, Kateera [16,17]
Laakh	Hot [2] Dry [2,18,22]	Muqawwie Kabid wa Ahsha, Dafe'a Khafqan, Muhallil, Mufattehe Sudad, Munaqqie Akhlat [18,19]	For Head and Spleen [18,19]	Mastagi [22]
Rewand Chini	Hot [2] Dry [2], M/quwa [18,22]	Mushil, Qabiz, Muqawwie Ahsha, Muqawwie Meadah, Ama'a wa jigar, Mudirre Haiz, Muhallil [18–20]	For week people [18]	Samaghe babool, Kateera, bahdana [19,22]
Beekhe Kibar	Hot [2] Dry [2,22]	Muhallil, Muqatte'a, Munaqqi, Mufatteh Sudad, Mudirre Haiz, Munaqqise Balgham, Muqawwie meadah [19,20,22]	For Gurdah and Masanah [22]	Sikanjabeen, aneesoon, Shahad [19,22]

(*Casucata epithimum* Linn.) with Haar III degree and Yabis III degree mizaj, *Ustukhuddoos* (*Lavandola stoechas* Linn.) with Haar I and Yabis II degree Mizaj, *Turbud* (*Operculina turpethum*) with Haar III and Yabis III degree mizaj and *Haleelah Siyah* (*Terminalia chebula* Retz.) with Barid I and Yabis II degree mizaj are added in this formulation for their synergistic actions due to their activities of *Munzjij* (concoctive) and *Mushile Sauda* and *Balgham*, *Muhallile Nafakh*, *Mufattehe Sudad*, *Muqawwie A'asab* (nervine tonic), *Muqawwie A'azae Batinah* (tonic for internal organs) *Munaqqie Dimagh* (elimination of morbid matters from brain), *Mushile Safra* (cholagogue), *Munaqqie Fuzlate Badan* (removes wastes from body), and *Munaqqie Meadah* (cleans stomach).

Drugs like *Baleelah* (*Terminalia bellerica* Roxb.) with Barid I and Yabis II degree mizaj and *Aamla* (*Emblica officinalis* Gaertn) with

*Barid I* and *Yabis II* degree mizaj are added in this formulation for their supportive role to the base drug due to their activities of *Muqawwie A'asab*, *Muqawwie Qalb* and *Meadah*, *Muqawwie Dimagh*, *Muqawwie Ahsha*, *Muqawwie A'azae Raesa*, *Mushil Bil Asar* *Musakkine Hiddate Safra* (normalizes abnormal hotness of bile). No seemingly *Muslah* (corrective) drug was incorporated in the formulation as it is used basically to evacuate *sauda* (Black bile). For intestinal harmful effects it has been advised to use it for not more than a month by the Unani physicians [23,25].

### 3.2.2. Clinical approach of formulating a *Murakkab*

This formulation is used in *Melancholia*. According to *Usoole ilaj* of *Melancholia* following treatment plan is to be adopted in Unani medicine:

**Table 2**  
Analysis of ingredients of Majoon Najah.

Ingredients	Mizaj	Afa'al	Mazarrat	Musleh
Bisfayij fustuqi	Hot [1] Dry [2,19]	Mufarreh wa muqawwie qalb, Mushile sauda wa balgham, Muhallile dame munjamid, Kasire riyah [18–20,32]	For chest and kidney [18–20]	Gule Surkh [18,19]
Afteemoon wilayati	Hot [3] Dry [3,18,20]	Mushile sauda wa balgham, Muhallile nafakh, Mufattehe sudad [27–29]	For lungs, produces dryness and anxiety [27]	Roghan badam, kateera [27]
Ustukhuddoos	Hot [1] Dry [2,27,28]	Muqawwie a'asab, Munaqqie dimagh, Mushile sauda wa balgham, Mufattehe sudad, Mukhrjije deedan wa hayyat, Muqawwie a'azae batinah [27,29]	For lungs and hot temperament people [32]	Sikanjabeen [31,32]
Turbud	Hot [3] Dry [3,30]	Mushile balgham, Munaqqie fuzlate badan, Munaqqie meadah, mushile safra [18–20]	For intestines, produces dryness, harmful for hot temperament people [18]	Roghane badam [18]
Haleelah siyah	Cold [1] Dry [2,13]	Mushile sauda, Dafe'a suda'a, Mushile safra, Muqawwie dimagh, Jazibe ratoobat [18,21,31]	Muhazzil [18,19]	Ghee [18]
Baleelah	Cold [1] Dry [2,29]	Muqawwie dimagh wa meadah, Muqawwie a'asab, Muqawwie ahsha, Mushil bil asar [19,20]	For intestines and rectum, produces convulsions [20]	Shahad khalis [31]
Aamlah	Cold [1] Dry [2,26]	Muqawwie a'asab, Muqawwie qalb wa meadah, Muqawwie a'azae raesa, Musakkine Hiddate safra, Muqawwie sha'ar, Musaffie khoon [29,31]	For spleen, produces qoolanj [18]	Shahad and roghan badam [18]

Tafreeh and Taqwiyat (mood elevation and potentiating) + Taqwiyate A'asab wa Dimagh (potentiating nerves and brain) + Taqwiyate Meadah (potentiating stomach) + Taskeene Hararat (normalization of abnormal hotness) [15,16].

Majoon Najah as a drug formulation for Melancholia may thus be analyzed: Bisfayij Fustuqi and Aamla are added for Tafreeh and Taqwiyat. Taqwiyate A'asab and Dimagh are needed so drugs like Ustukhuddoos, Haleelah Syah, Baleelah and Aamla are added. For Taskeene Hararat drugs like Haleelah, Baleelah and Aamla are added for their Barid Mizaj. Taqwiyate Meadah is necessary so drugs like Bisfayij Fustuqi, Baleelah, Aamla and Afteemoon are added for their Muqawwie Meadah and Hazim (digestive) properties. As this disease is caused by derangement of Akhlat (humours) so Mo'addilat (moderate), Munzijat (concoctive) and Mushilat are necessarily used. In this formulation Bisfayij Fustuqi and Afteemoon are added as Mo'addil and Munzij drugs. Bisfayij Fustuqi, Afteemoon wilayati, Ustukhuddoos, Haleelah Syah, Turbud and Baleelah are added for Tanqiyah Mawad as these drugs having Mushile Sauda, Mushile Balgham and Mushile Safra properties.

#### 4. Discussion

It was observed that there are two approaches of formulating Murakkab drugs. Murakkab drugs are formulated either through drug actions that were in concordance to the nature of disease along with ameliorating the safety concern of the use of these drugs as proposed by Ibne Sina; or keeping the Usoole Ilaj in perspective and choosing the single drugs to suit it [14]. Ibne Sina's approach rests on the principle that base drug(s) are chosen in accordance to disease severity and derangement in mizaj with addition of Musleh and Badarqah while Usoole Ilaj approach emphasizes on selecting drugs on the basis of the treatment plan for the particular disease. Among the two approaches, Ibne Sina emphasizes the characteristics of drugs as of primary importance and this approach seems to be better from the perspective of Ilmul Advia (pharmacology). Analysis of the exemplified drug formulation showed that the formulations were designed from Usoole Ilaj

(clinical perspective) with good correlation with the approach of Ibne Sina.

With the analysis of two known compound drugs by the application of these two approaches underlying compound formulation it was found that the selected formulations were in consonance to both the approaches of formulating Murakkab drug. The approaches enumerated above may serve as base for rejecting spurious drug formulations with huge number of ingredients or irrationally conceived formulation.

All the approaches underlying Tarkeebe Advia (formulation of Murakkab drug) have been enumerated using Unani literature. These approaches are well documented, but have not been presently utilized for developing new Murakkab drugs. The reason for this lagging is not so unclear. The regulatory bodies need evidences in terms of efficacy and toxicity for licensing a product for human use. Though proprietary formulations have been allowed in some countries with evidence for the ingredients used in preparing a formulation, but most of them do not apply the conceptual basis of formulating a Murakkab drugs as stated in Unani medicine. This makes the enterprise seemingly a different category other than Unani medicine. The presented Unani rationale will enable a construct validation for huge number of formulation base and efforts for standardization will be consequently minimized. It is not far fetching for seeking similar rationale in other traditional systems of medicine. The integrated approach towards the traditional systems for cure of the disease and sustenance of health lies in the common grounds that these systems hold and understanding fundamental frameworks like rationale behind compound formulations will provide one of the solid basis for integration.

The stated framework in the present study needs further validation and caution is needed to use Murakkab prepared through qiyas as stated by Ibne Sina; 'it should be known that the tested drugs are better than the untested ones. The use of a smaller quantity of a drug is more beneficial than that of a larger quantity, particularly for a specific purpose. Tested drugs are better. The reason is that all compound medicines can be judged in two ways; (a) by its ingredients, and (b) by its composition. Untested medicines can be useful in respect of its ingredients only, but we cannot ascertain their acquired mizaj

**Table 3**  
Comparison of two approaches to drug formulation exemplifying various Murakkabat.

S. no.	Ingredients	Pharmacological approach	Clinical approach
<b>1. Qurse Ghareeqoon</b>			
1	Ghareeqoon	Base drug	Taskheen, Tahleel, Tanqiyah Mawad
2	Tabasheer	Synergistic, Corrective for Sumbul-ut-teeb	Tabreed, Tahleel, Qate'a Safra
3	Gule Surkh	Corrective for Usarah Ghafis	Tabreed, Tahleel, Tafteeh, Qate'a Safra
4	Usarah Ghafis	Synergistic	Taskheen, Tahleel, Tafteeh, Talteefe Mawad, Taqtee'a Akhlat
5	Sumbulutteeb	Synergistic, Corrective for Laakh	Taskheen, Tahleel, Tafteeh
6	Laakh	Synergistic action	Taskheen, Tahleel, Tafteeh
7	Reward Chini	Synergistic action	Taskheen, Tahleel
8	Beekhe Kibar	Synergistic action	Taskheen, Tahleel, Tafteeh, Nuzj of Warme Balghami
<b>2. Majoon Najah</b>			
1	Bisfayij Fustuqi	Base drug	Tafreeh and Taqwiyat, Kasire Riyah and Muqawwie Meadah, Mo'addil, Munzij, Mushile Sauda and Balgham
2	Afteemoon Wilayati	Synergistic	Kasire Riyah and Muqawwie Meadah, mo'addil, Munzij, Mushile Sauda and Balgham
3	Ustukhuddoos	Synergistic	Taqwiyate A'asab and Dimagh, Mushile Sauda and Balgham
4	Turbud	Synergistic	Mushile Balgham and Safra
5	Haleelah Syah	Synergistic	Taqwiyate A'asab and Dimagh, Taskeene Hararat
6	Baleelah	Supportive	Taqwiyate A'asab and Dimagh, Taskeene Hararat, Kasire Riyah and Muqawwie Meadah, Mushil bil Asar
7	Aamlah	Supportive	Tafreeh and Taqwiyat, Taqwiyate A'asab and Dimagh, Taskeene Hararat, Kasire Riyah and Muqawwie Meadah

(temperament) before experiment. It may be either higher or lower or contrary to the required temperament. Tested medicines have already been ascertained in both aspects. Sometimes the constitutional form of a compound medicine is more important than the anticipated efficacy of its ingredients' [14].

The basic criterion of validating efficacy of the formulation remains to be the *Tajurba* (Clinical trial) in human, but these rules and approaches may serve new means to look at the huge resource base of drug formulations in a rational way. This might serve a way in reducing the number of ingredients in a classical formulation with similar efficacy profile (see Table 3).

## 5. Conclusion

The *Murakkab* drugs formulated by Unani physicians had a lot of consideration for the principles of treatment of a disease and precise knowledge of the various aspects of single drugs. The two approaches enumerated might furnish a logical base to approach the huge prescription and formulation base in the form of *Qarabadeen* (formularies) for their analysis and designing.

## Conflict of interest

There is no matter of conflict of interest in this paper.

## References

- [1] Ahmad I. Kulliyate Asari. New Delhi: New Public Press; 1983. 5, 17.
- [2] Kabeeruddin M. Ifadah Kabeer Mujmal. New Delhi: Idarah Kitab-us-Shifa; 2010. p. 9.
- [3] Shah M. The general principles of Avicenna's Canon of medicine. New Delhi: Idara Kitab-us-Shifa; 2007. 359, 361.
- [4] Department of Homeo and Traditional medicine DGHS, Mohakhali, Dhaka, Ministry of Health and Family Welfare Government of the People's Republic of Bangladesh. Treatment guideline for Unani medicine. 1st ed. April 2006. p. 8–15.
- [5] National formulary of Unani medicine part-1st. New Delhi: Government of India Ministry of Health and Family welfare, Department of AYUSH; 2006. p. 253–86.
- [6] Qureshi EH. Muqadma Ilmul Advia. New Delhi: Ejaz Publishing House; 1995. p. 163.
- [7] The Unani pharmacopeia of India, vol. 1 (Part-1st). New Delhi: Department of AYUSH, Ministry of Health and Family welfare, Gov. of India; 2007. p. 206–15.
- [8] Hsiao JIH. Patent protection for Chinese herbal medicine product invention in Taiwan. J World Intellect Prop 2007;10(1):1–21. <http://dx.doi.org/10.1111/j.1422-2213.2007.00311.x>.
- [9] Chan K. The way forward for Chinese medicine. In: Chan K, Lee H, editors. Understanding the toxicity of Chinese medicinal products. London: Taylors and Francis; 2002. p. 71–91.
- [10] Majoosi AH. Kamil-us-Sanaah [Urdu Trans: Ghulam Hasnain Kantoori]. vol. 2. New Delhi: CCRUM; 2010. p. 461–71.
- [11] Maseehi AAI. Kitabul Umdah fil Jarahat [Urdu Trans: CCRUM]. New Delhi: CCRUM; 2004. p. 261–6.
- [12] Antaki D. Tazkiratu Uoolil Albab, vol. 1. New Delhi: CCRUM; 2008. p. 54–61.
- [13] Rushd I. Kitabul Kulliyat [Urdu Trans]. New Delhi: CCRUM; 1987. p. 328–38.
- [14] Sina I. Al-Qanoon fit Tib [Urdu Trans: Ghulam Hasnain Kantoori]. 2nd ed., vol. 5. New Delhi: Idara Kitab-us-shifa; 2007. p. 1457.
- [15] Khan MA. Akseere-e-azam. New Delhi: Idara Kitab-us-Shifa; 2011. 379, 557.
- [16] Kabeeruddin M. Takmilah Kitabul Advia. Hyderabad: YNM. 38, 82–83 1356 A.D.
- [17] Jurjani AH. Zakheera Khwarzam Shahi [Urdu Trans: Khan Hadi Hasan]. vol. 10. New Delhi: Idara Kitab-us-shifa; 2010. p. 64–9.
- [18] Ghani N. Khazainul advia. New Delhi: Idara Kitab-us-Shifa; YNM. 187, 226, 242, 370, 750, 958–959, 1352 1928 A.D.
- [19] Almaghribi I. Kitabul Fatah Fittadawi min jamee'e Sunoofil Amraze Was-shakawi [Urdu Trans: Abdul Bari]. New Delhi: NCPC Printers; 2007. 46, 48, 54, 66, 68, 96, 98, 122, 128, 164, 182, 188, 216, 234.
- [20] Baitar I. Al-Jameul Mufradat al-Advia wa al-Aghziya [Urdu Trans: CCRUM]. vol. 1. New Delhi: CCRUM; 1999. 231, 276. Vol. 2: 275. Vol. 3: 88, 211, 326, 330. Vol. 4: 416, 436.
- [21] Momin KM. Tohfatul Mo'ameneen. Lucknow: Matba Hasani. 1276H: 23, 41, 181 1861 A.D.
- [22] Kabeeruddin M. Makhzanul Mufradat. New Delhi: Idara Kita-us-Shifa; 2007. 67, 71, 102, 110, 203, 221, 242, 252, 271, 309, 380, 408–409, 440, 609.
- [23] Khan HS. Bayaze khas Al m'arroof Ilajul Amraz. New Delhi: Ejaz Publishing House; 2006. p. 75.
- [24] Arzani MA. Qarabadeene Qadri [Urdu Trans: CCRUM]. New Delhi: CCRUM; 2009. 26, 423.
- [25] Khan AHM. Ramooze Azam, vol. 1. New Delhi: CCRUM, Department of AYUSH, Ministry of Health and Family welfare, Gov. of India; 2006. 67, 342.
- [26] Taleefe Shareefi. Delhi: Matba Darussalam; YNM. 16, 55, 110 1961 A.D.
- [27] Ghulam NM. Makhzane Mufradat wa Murakkabat. 2nd ed. New Delhi: CCRUM, Ministry of Health and Family Welfare, Gov. of India; 2007. 40, 41, 42.
- [28] Hasan Abul. Bahrul Jawahar. Lucknow: Matba'a Alwi; 1872. 28, 43.
- [29] Kirmani NE. Annafeesi (explained by Abid Husain). Lucknow: Matba'a Munshi Nawal Kishore; YNM. 27 1856 A.D.
- [30] Haleem MA. Mufradate Azizi. New Delhi: CCRUM; 2009. 13, 14, 36, 47.
- [31] Zain-ul-Attar H. Ikhtyarate badeei. Lucknow: Munshi Nawal Kishore; YNM: 21, 84 1889 A.D.
- [32] Khan HA. Majma-ul-Bahrain. Lucknow: Matba'a Munshi Nawal Kishore; YNM. 130, 134–135 1877 A.D.