Frontiers in Health Informatics
ISSN-Online: 2676-7104
www.healthinformaticsjournal.com
2024; Vol 13: Issue 7
Open Access

Hypothesis And Experimentation Guidelines for Identification of Unknown Drugs in Classical Unani Literatures

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Cite this paper as: Dr. Amena Khatoon (2024) Hypothesis And Experimentation Guidelines for Identification of Unknown Drugs in Classical Unani Literatures. *Frontiers in Health Informatics, 13* (7), 824-830

ABSTRACT :Research is a systematic process of inquiry that aims to discover ,interpret, and create new knowledge ,ideas, or understanding . It is a fundamental aspect of academic, scientific and professional undertakings , serving as a methodical approach to answering questions, solving problems and advancing human understandings in various fields
Research questions or hypotheses frame the inquiry and provide direction for investigation. They articulate what the researcher seeks to explore, explain, or demonstrate.
Before conducting original research, scholars review existing literature relevant to their topic. This helps situate their work within the broader context of existing knowledge, identify gaps, and refine their research questions. In Unani system of medicine , in various classical literature there have been a guideline , procedure suggested to carry out research . Steps are mentioned how to design a hypothesis or how to derive a result based on the previous data or evidence and observations .A proper methodology has been explained. This shows that how the ancient Unani physicians were keen in doing research in those days , this reflect their high standards of observations and enthusiasm of progress .
Key words: Unani medicine, research ,classical,

INTRODUCTION: Research in Unani Medicine encompasses a wide range of topics aimed at understanding its principles , efficacy , safety and integration with modern healthcare practices. Unani medicinal remedies are derived from plant ,animal as well as mineral origin products. Research investigates the therapeutic properties, mechanisms of action, and efficacy of these formulations in treating various diseases and conditions. Clinical trials are carried out to evaluate the effectiveness and safety of Unani preperations as well as single drugs for specific health conditions. This includes randomised controlled trails (RCTs) ,Observational studies and systematic reviews/ meta-analyses. Researchers explore traditional diagnostic methods used in Unani medicine , such as Nabz (pulse) ,temperament assesment (mizaj) to understand and correlate with the modern diagnostic tools. Pharmacological research investigates the bio active compounds present in the Unani herbal medicine and their effects on the human body. This includes studies on mechanism of action , pharmacokinetics and toxicity profiles. There is growing interest in integrating Unani medicine with modern healthcare systems. Research explores the potential synergies , challenges and best practices for integrating Unani therapies with conventional medical treatments in a complementary or integrative manner.

Overall ,research in Unani medicine plays a crucial role in advancing our understanding of this ancient healing system , promoting evidence based practice, and integrating traditional wisdom with

modern healthcare approaches for the benefit of individuals and communities worldwide.

A research guidelines have been postulated in the Unani classical literatures ,based on the known facts and properties of known drugs ,functions and possible charachteristics and functions of unkown drugs can be derived .Hypothesis making and drawing conclusion and conducting research has been explained in a very systematic manner long long ago.

Identification of unkown drugs can be done in 2 ways:

1. **QIYAS (HYPOTHESIS/IMAGINATION):** The method of establishing a hypothesis on the basis of already known properties regarding the action of drug is termed as qayas. It's of 2 types:
- Qiyas-e-qawi (stong hypothesis)
- Qiyas-e-zayeef (weak hypothesis)

2. **TAJRUBA (EXPERIMENT/EXPERIENCE):** The method of experimenting on the actions of an unknown drug in the light of already established facts which are present in the other drugs such as colour, smell, taste, consistency, and weight is termed as tajruba. Ex: Sandal sufaid (Santalum album) and camphor (Cinnamomum camphora) are white in colour and both of them are mufarreh (Refrigerant) and musakkin (Sedative) in nature. Therefore we can predict that an unknown white coloured drug may probably be a musakkin and a mufarreh. This is further confirmed through experiments. Other factors like istehala (metabolism), heat, cold, air, water, fire and sunlight may also contribute in experimenting on the actions of a drug.

QIYAS (hypothesis/ imagination)

QIYAS-E-QAWI (stong hypothesis)
This hypothesis is stronger in its authenticity. It is usually done based on the following 3 things:
1. **MAZA (TASTE) of the drugs:** Tastes can be classified in 9 categories.

- **Advia-e-hareef (spicy drugs):** These drugs are hot and moderately dry in temperament. They have the following af'aal-o-khawas (characteristics). They are mufatteh urooq (deobstruent), mulattif, muraqqiq (thinner), muhallil (resolvant), musakhin (calorific), mujaffif (siccative), muharriq (charring) and jali (detergent). Ex: onion(Allium cepa), rayi (Brassica juncea) , fil fil-e-siyah (Piper nigrum.) , fil -fil-e-sufaid (Piper nigrum), aqarqarha Anacyclus pyrethrum) etc.

- **Advia-e-murra (bitter drugs):** These drugs have moderately hot and mostly dry temperament. They resemble advia-e-hareef but do not have strong afaal-o-khawas. They are mufatteh urooq (deobstruent), muhallil-e-mawad (resolvant), musakhin (calorific), mulattif, muraqqiq (thinner) and mana-e-ufoonath (anti-septic). Ex: Ustukhuddus (Lavandula stoechas), Afsanteen (Artemisia Absinthium), Elwa (Aloe barbadensis Mill) , charaita (Swertia chirayita), shahetra (Fumaria parviflora Lam) etc.

- **Advia-e-maleh (salty drugs):** These drugs are less hot but more dry in temperament. They are mufatteh urooq (deobstruent), mulattif, musakhin (calorific), muhallil (resolvant), qate mawad (lacerative), jazib-e-rutubath (absorbant), dafa-e-ufoonath (anti septic) and jail

(detergent). Ex: mooli (Raphanus sativus) etc

• **Advia-e-hamiz (sour drugs):** These drugs have less cold mizaj, motadil mayal (near to moderate temperament)and less dry. They are mubarrid (refrigerant), qate (lacerative), mulattif, murakkhi (oily), musakkin-e-pyaas (thirst quencher), mufatteh (deobstruent), murattib (moisturiser), jali (detergent), kasir-e-riyah (carminative), mana-e-ufoonath (anti septic), muzayyif-e-asaab-o-baah (nerve depressor and and munaffiz (penetrative). Ex: aab-e-leemu (Citrus limon) lemon water, alu bukhara (Prunus domestica Linn), tamar-e-hindi (Tamarindus indica) Amla (Emblica officinalis Gaertn). etc.

• **Advia-e-qabiz (astringent drugs):** These drugs are moderately cold and dry in temperament. They are qabiz (astringent), habis (hemostyptic), raade (divertive), aasir (squeeze), mukhashin (peeler), mughalliz (thicken), mubarrid (refrigerant) and mukassif (solidify). Ex: chaliya (Areca catechu) etc.

• **Advia-e-ufus (bitter drugs):** These drugs are less dry and colder in temperament. They are habis (hemostyptic), aasir (squeeze), qabiz (astringent), rade (divertive), musallib (solidify), mukhashin (peeler), mughalliz (thicken), mubarrid (refrigerant) and mukassif (thicken). Ex: Supari (Areca catechu), maazu (Quercus infectoria),etc

• **Advia-e-dasm (oily):** These drugs contain moderately hot and moist temperament. They are murattib (moisturiser), muraqqiq (thinner), murakkhi (oily), mulayyin (soften), muzliq (mucliginous) and munzij (concoctive)j. Ex: ghee (clarified butter), all roghans (oils) etc.

• **Advia-e-hulu (sweet):** These drugs have moderate temperament. They are musakkhin (calorific), jaali (detergent), mulayyin (soften), murakkhi (oily), munzij (concoctive), murattib (moisturiser) and mughazzi (nutritive). Ex: shehad (honey), sugar etc

• **Advia-e-tuffa/maseekh (tasteless):** These drugs are also moderate in temperament. They are musakkin-e-atish (thirst quencher) and musakkin-e-hararath (heat reliever). Ex: paan(Piper betle) etc

NOTE: advia-e-hamiz, aafiza, and habis are mayal-e-burudath (inclined to cold). In this aafiza is coldest, habis comes next and lastly comes hamiz. Their mizaj is sard-o-khushk (cold and dry). In hareef, hararath and yabusath ismore, in murra it is less than that of hareef, whereas in maleh it is very less.

2. **RAAIHA (SMELL):** Second most important means of doing a qiyas-e-qawi. If a known sedative drug contains a fragrance, and an unknown drug posses a similar fragrance then it can be concluded that the unknown drug may also be sedative in nature. A few examples are mentioned below:

• We are aware of the functions of drugs like phenol and kafoor (Cinnamomum camphora) , they are anti-septic and have a characteristic smell. If an unknown drug has a fragrance similar to that of kafoor and phenol we can predict that it might be anti-septic in nature.

• It is said that drugs having pungent smell are hot and dry in temperament like garlic(Allium sativum), onion (Allium cepa) ,
Mushk (Moschus moschiferus) , saffron (Crocus sativus) , clove (Syzygium aromaticum) etc. as heat is needed for the transport of the chemicals (volatile constituents) to the olfactory receptors and from there to the centre of smell. However there are exceptions to this rule. Ex: even though kafoor

(Cinnamomum camphora) has a strong smell it is cold in temperament. In the same way a few drugs with no characteristic smell are hot in nature. Eg: besh (Aconitum napellus) and sankhiya (arsenic).

- The drugs that sooth the brain through their fragrance are cold in temperament.

3.ISTEHALA (METABOLISM): The external and internal changes that occur in the drug due to various factors like heat, cold, moisture, sunlight, moon light and friction are called as metabolism of the drug. Qiyas can also be done by metabolism. Ex: Few drugs when exposed to fire get heated in a very short span of time where as others are very slow in their reaction. From this observation it can be conditional that the drugs that get heated up early are hot in temperament while the ones that take time to heat up are cold in temperament. The drugs with hot temperament on consumption produce heat in the body.

3.Learning through animals: Unknown drugs consumed by animals like sheep, goat, cow etc will have almost the same effect on humans as that on the animals. Ex: On consuming Anjabar (Polygonum aviculare) a goat suffering from Tuberculosis was cured. On the other hand it was observed that another goat that ate mushkatar-amshee (Mentha Sylvestris) had bleeding udders. Similar effects can be observed in humans when these drugs are consumed.

QIYAS-E-ZAYEEF (weak hypothesis) **:** This type of qiyas does not give reliable results. It can only be made authentic through tajruba(experiment). Qiyas-e-zayeef is done through the factors like colour, shape, season of birth, place of birth, resemblance with the human organs, resemblance with other drugs and lustre of the drug.

1. Dawaon ke rang (colour of drugs): Drugs are of many colours i.e. black, white, red, green, yellow, blue etc. Doing qiyas on all the colours will make the qiyas-e-zayeef weaker. To remain on the safer side atibba have only done qiyas on two colours i.e. black and white. They have also added the consistency of the drug with its colour to make this qiyas a little stronger. White drugs like sandal-e-safed and kafoor are mufarreh (exhilarant), dafa-e-tafun (anti-septic) and musakkin (sedative). Based on this fact it can be said that the drugs that are white in colour may also possess similar properties.

The following points have been noted from experience:

- White solid drugs (safed rang ki jamid dawa) have garm mizaj (hot temperament).
- White liquids drugs (safed rang ki syyal dawa) have sard mizaj (cold temperament).
- Black liquid drugs (siyah raqeeq dawa) drugs have garm mizaj(hot temperament).
- Black dry drugs (siyah khushk dawa) drugs have sard mizaj (cold temperament).
- If white, red and black coloured nabati and haiwani drugs have sard mizaj then white coloured ones will be extremely cold, red coloured ones will be moderately cold and the black coloured ones are the least cold.
- If white, red and black coloured nabati and haiwani drugs have garm mizaj then white coloured ones will be least hot, red coloured ones will be moderately hot and the black coloured ones the hottest.

2. Dawaon ki shakl (shape of drugs): By looking at the external features of a drug qiyas is done to analyse its unknown properties. If the drugs that are spherical and long in shape have a cold temperament then they will be excessively cold and if they have a hot temperament then they will be least hot.

3. Dawaon ki paidaish ka mousam (season of birth of drugs): The drugs that grow in a particular season and end with the season will usually have the same mizaj as that of the season.

4. Dawaon ke muqam-e-paidaish (place of origin of drugs): The drugs which are cultivated in a particular area will usually be useful in the treatment of endemic disease prevalent in that area. However it is necessary to take precautions before trying them.

5. **Insane azu se mushabahat (resemblance with an organ**): The drugs which resemble human organs are usually useful in the diseases of that organ or help in strengthening that organ. Ex: maghz-e akhrot resembles brain and it is muqawwi-e-damagh. Badam resembles eye and it is muqawwi-e-ain. Suranjan resembles mufasil (joint) and it is used in waja-ul-mufasil (arthritis). Dana-e-mastagi resembles stomach and used in amraz-e-meda. Bhilawa resembles heart and it is muqawwi-e-qalb.

6. **Dawaon me mushabahath (similarity among drugs):** It has been observed that when two drugs are similar to each other in their appearance then they act as poison and antidote to each other. Ex: Dhathura (poison) and Baigan (antidote), Jadwar (antidote) and Besh (poison). Some poisonous drugs have got antidote in them self. Ex: scorpion has got antidote to its sting in the form of rutoobath which is present in its body.

7. **Dawaon ki chamak damak (lustre of drugs):** The drugs which are shiny in nature fulfil the resplendent needs of the body. Ex: Kohl-ul-jawahar is muqavviy-e-basr and jawahir mohra ,muqavviy-e-rooh.

TAJRUBA (Experiment):

After establishing the hypothesis, a drug is experimented externally or internally and its effects are authenticated. The process of intentional consumption or application of an unknown drug to confirm its properties/functions is termed as “tajruba”. This is why tajruba is “yaqeen (fact)” and qayas is “gumaan (assumptions /doubt)”.

Two important discussions under tajruba are:

- Muharrikaat-e-tajruba (factors that bring about experience to be carried out, impulse to do experiment)
- Sharayat-e-tajruba (pre-requisites/conditions for doing an experiment)

Muharrikaat-e-tajruba: There are many factors on the basis of which drugs may go under trial or research can be initiated, these act as initiatives for research , They are
termed as “Muharrikat-e-tajruba”.

1) **Ittefaaq (by chance):** A patient took drugs or diet purely by chance and was relieved of his suffering. Ex: a leper(patient suffering from leprosy) happened to drink an alcohol in which a snake had died and was cured of leprosy. Seeing this incident researchers and scholars started researching on the exact constituent that had acted as the medicine.

2) **Mailan-e-taba/shauq-o-roghbat (interest):** At times, patients develop a strange craving for a particular drug/food items at the time of illness. And incidentally that particular drug or food becomes the reason for their cure. Ex: it has been recorded in history that a woman in Egypt suffered from ehtebas-e -haiz (amenorrheoa) and zof-e-meda (fragile stomach). She developed a strong craving for

zanjabeel shami(Inula racemosa Hook.). After eating it consistently for a few days she was cured of both the diseases. After research it was confirmed that zanjabeel shami is beneficial in ehtebas-e-haiz and zof-e-meda.

3) **Ilham (revelation):** Spiritual people learned things through their spirituality. Treatment for a particular disease would be revealed to them through ilham. They would use that drug and find it beneficial. Later on research would confirm the benefits of the drug.

4) **Ilqa (inclination):** Sometimes at the time of dire need or extreme helpless situations people feel inclined to use a particular thing which they feel will relieve them of their suffering. They use it and are cured. Seeing this doctors and researchers experiment on that drug and find it useful. Ex: a patient suffering from hisaat-e-masana (calculi in urinary bladder) felt that ashes of mamoola will cure him. He used it and recovered from his illness.

5) Dars-e-haiwani (lesson from animals): There have been instances in history when great physicians adopted method of treatment from animals and birds. Ex: Jaalinoos (Galen) observed a seagull by the seashore. It filled its beak with water and poured the salty water into its anus. After a while the bird passed rigorous stools and was relieved of constipation.
This is how the concept of Huqna (enema) was born.
Ex: A snake bit a monkey. His fellow mates started chewing on barg-e-bedanjeer (leaves of Ricinus communis L.) and pouring its juice into his mouth. This cured the monkey.
Ex: when the eyesight of a snake becomes weak he rubs them on the leaves of badiyan (Foeniculum vulgare) . This returns his eyesight back to normal.
All these treatments were tested in humans and were found beneficial.

5) **Khuab (dream):** Sometimes a patient or his loved ones see a dream that he has been cured on taking a particular drug. He ate it after waking up and recovered. Thus the effects of the drug came to light.

7) Jung, safar, qahet (war, travel and famine): Unavailability of food during travel, famine and war forces the people to eat things which they do not usually consume. Fruits and vegetables like Aalu (potato), Arwi (Colocasia esculenta), shakkarqand (Ipomoea batatas)etc are known to us today only because our forefathers tried to eat them during famines.
Once there was a severe famine in China. People were forced to eat leaves and roots of trees in the jungle. Chobchini (Smilax China)grew in abundance there; since it was better in taste than the rest of the leaves and the smell was tolerable, people started consuming it a lot. Later on they realised that many diseased among them were cured. After a lot of observation, they realised that all the “saudavi amraz” (disease caused by black bile) had been cured. Hence it was formulated that Chobchini (Smilax China)is good for saudavi amraz.

8) Adawath aur khudkhushi (enemity and suicide): A few drugs were used with the intent of homicide and suicide but instead of killing the person the drug became the reason for their recovery. A person suffering from zeeq-un-nafs (asthma), waja-ul-mafasil(arthritis), aatishak (syphilis)and su’aal-e-muzmin(chronic cough) consumed para (mercury), sankhiya(arsenic) or shangraf (cinnabar)with the intention of suicide. Instead of leading to his death, the drugs became a source of his partial or complete recovery.

RULES TO BE FOLLOWED FOR EXPERIMENT IN PHARMACOLOGY:
(Sharayath-e-tajruba):

1) Initially qiyas-e-qawi and zayeef need to be conducted of an unknown drug. Its probable actions need to be recorded. Then the drug should be experimented on an animal (experimental pharmacology) which is consumed by humans or his internal system resembles that of humans. If the drug gives the same effects as formulated by qiyas then it should be experimented on human beings (clinical pharmacology) under strict precautionary measures. It is necessary to bear this in mind that a few drugs do not produce any negative symptoms in animals but can be dangerous when consumed by humans. Or they may have different actions in animals and humans.
Ex: Revandchini (Rheum officinale Baillon) produces heat in a human body, whereas it produces coldness in a horse. Similarly maghz-e-badam (Prunus amygdalous Batsch) produces intense heat in a horse whereas there is no such reaction when it is consumed by humans. Shaukran which is destructive for humans is the food for a bird called zarzor (sparrow).
2) Drug should be free from the influence of any external factors. Ex:- Afyun (Lachryma papaveris) it is barid (cool temperament) but when kept under sunlight it becames haar(hot temperament).
3) Effect of drug should be experimented in a mufrad (single)disease.
4) Effect of drug should be experimented in different diseases.
5) Drug should be used according to the severity of the diseases.
6) Effect of drug should be primary in nature. It should not be affected by any secondary factors that may alter its functions or mizaj (temperament) or may hinder its treatment of the disease.
7) Effect of drug should be permanent and continual.

CONCLUSION:

It is evident that unani system of medicine is having a concept of research and generating hypothesis and drawing inferences from a very ancient period. The probable data and facts and hypothesis available should be utilized and new data and evidence should be generated so that research in Unani system is propagated in scientific manner and becomes evidence based.

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