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Design, development and evaluation of classical Unani dosage form and drug delivery system with respect to novel dosage form: A review

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Abstract

Purpose: The aim of this manuscript is to highlight the hard work in the form of innovation, transformation, design, development and evaluation in classical Unani drug dosage form and delivery system by the recent Unani scholars in the field of *Ilmul Saidla* (Pharmacology).

Background: *Ilmul Saidla* is a science in which various single drugs or drugs substances are rendered into a suitable dosage form by composition/mixing and analysis to achieve palatability, absorption and assimilability, distribution, metabolism and excretion of the drug, besides, safety, efficacy, and quality of single drugs as well as compound formulations for therapeutic indications. The spectrum of classical Unani dosage forms and delivery system is very broad which has a large number and different types of dosage forms. But most the classical forms are not easily accepted by the mass of patients as their primary choice. Therefore, it is much needed to transform these classical forms into possible novel dosage form with the help of modern pharmaceutical approach.

Methodology: The possible knowledge regarding the topic is searched and compiled specially from the different post-graduation departments of *Ilmul Saidla* in Unani institutes in the India to gather the information regarding the novel approach in classical Unani drug system done by recent Unani scholars.

Conclusion: After going through the literature and researches in the concerned field, it is concluded that the newer researches of different classical Unani drug dosage form must not left in the form of research notion only; it must be included in the mainstream of Unani drug delivery system and must come into practice.

Future Prospects: Every new research should follow the all steps of drug trial from characterization to *in vitro* and *in vivo* studies, after that human trail must be done and then every new design must come to the humankind to take the future of Unani at the new edge domestically and globally.

Index terms: Unani, Classical Unani Drug dosage, Novel Drug delivery system, *Ilmul Saidla*.

Keywords: Post-graduation, Unani, dosage

Introduction

Today we are in the twenty first century, our lifestyle changes with every dawn. It is more evident in the field of science; various inventions and discoveries are taking place daily and adding something new to life. The same is with the medical science which is directly related with the human health. With the evolution of man, medical science also has been taken in new dimensions gradually, and after a long journey it has reached at the present stage.

The fundamentals of Unani medicine are based on the principles of the nature, which can be followed like universal truth. But no footprints may be followed very long in the same way; new times require some changes, science is the chapter of the same. In today's world of science and technology, centuries' old text and pharmaceutical formulations of Unani medicine has to be reviewed, rewrite and modification of classical Unani medicinal dosage form and delivery system with respect to novel dosage forms with the help of modern scientific facts. In the following section the brief detail about the *Ilmul Saidla* will be discussed to understand the progress, current scenario and future prospects of *Ilmul Saidla*.

Ilmul Saidla is one of the main components of Unani system of medicine. The credit for coining the term '*Saidla*' for the first time goes to *Abu Rehan Al Biruni* who made it as the title of his celebrated book '*Kitabul Saidnah*'. *Ilmul Saidla* is a science in which various single drugs or drugs substances are rendered into a suitable dosage form by composition/mixing and analysis for therapeutic indications.

It deals with every aspect of the collection, purification, processing, enabling drug delivery, dosage forms, detoxification, and potentiating of their actions, until the final stage of formulation. This system of medicine provides various pharmaceutical processing to achieve palatability, absorption and assimilability, distribution, metabolism and

excretion of the drug, besides, safety, efficacy, and quality of single drugs as well as compound formulations. The spectrum of Unani dosage forms is very broad which has a large number and different types of dosage forms^[1-7]. The all form described in Unani classical text are summarized in the given below table:

Table 1: Ashkal-e-Advia (Drug Dosage Forms) Described in Unani Classical Text:

Jamid (Solid formulations)	Neem Jamid or Neem Saiyal (Semisolid or Semi Liquid)	Saiyal (Liquid)		Bukhari (Gas or Vapours)
Habb	Majoon	Maul jubn	Sakob	Bakhoor
Qurs	Itrifal	Ma-ul baqool	Ghusool	Inkabab, Bhapara
Shyaf	Anushdaru	Maul-lehem	Abzan	Lakhlakha
Hamool	Jawarish	Ma-ush-shaeer	Hamam	Shamoom
Farzaja	Anushdaru	Maul-asl	Pashoya	
Fateela	Dawaulmisk	Ma-ul baqool	NazooH	
Kaboos	Mufarreh	Ma-ul favakiha	Nutool	
Murabba	Laboob	Sirka, Sharab	Zarooq	
Norah	Khameera	Nabeez	Khizab	
Gulqand	Bershasha	Sharbat	Tila	
Rub	Zarooni	Sikanjbeen	Maravvakh	
Halva	Yaqooti	Dayaqooza	MasooH	
Safoof	Laoq	Rooh	Dalook	
Sanoon	Marham	Joshanda	Roghan	
Mazoogh	Hareera	Khesanda	Mazmaza	
Burud & Kohl	Falooda	Mehlool	Gharghara	
Zaroor, Nafookh & Atoos	Usara	Nuqoo	Saoot	
	Qeruti	Manqoo	Huqna	
Ghaza	Natookh	Naqee	Sabagh, Sabigh	
	Lazooq wa Lasooq	Haleeb		
	Zimad	Sheera, Luabat		

Note: Detailed information regarding the Ashkal-e-Advia (Drug Dosage Forms) described in Unani Classical text can be easily searched at various searching engine on the Google, Pub med etc. Here to keep the focus on the title of the manuscript, these are not explained.

Current Scenario in India: At present, Unani System of Medicine and its pharmacies comes under the patronage of Indian Government under the Ministry of AYUSH, and has been an essential part of the National Health Plan. India is leading in research, development, and education of Unani System of Medicine globally.

Central Council for Research in Unani Medicine (CCRUM), New Delhi: Keeping the pace with pharmaceutical research under the Ministry of AYUSH, Govt. of India has come up with the establishment of Drug Standardization Research Institute (DSRI), at Ghaziabad; Central Research Institute of Unani Medicine (CRIUM), at Hyderabad; Drug Standardization Research Unit (DSRU), at New Delhi; Regional Research Institute of Unani Medicine (RRIUM), at different cities of India. Standardization of around 300 single drugs in five volumes and about 400 compound drugs; physicochemical standards of 350 plus compound drugs, and National Formulary of Unani Medicine in five parts containing standards of about 1228 formulations has been published^[8-9].

There are more than 485 licensed Pharmacies manufacturing Unani drugs in different parts of the country and 88 pharmacies have Good Manufacturing Practice (GMP) certification. Moreover, Govt. of India has established an enterprise Indian Medicine Pharmaceutical Corporation Limited (IMPCL) for manufacturing the herbal medicine including Unani formulations which is one of the major manufactures of Unani drugs catering to the needs of the Central Government dispensaries^[8-9].

Manufacturing and sale of Unani Drugs are regulated under

Drug & Cosmetic Act 1940 with mandatory compliance with GMP. Drug Standardization is undertaken by competent institutions of central government e.g. Pharmacopeial Laboratory for Indian Medicine (PLIM), Pharmacopeia Commission of Indian Medicine (PCIM), Unani Pharmacopeia Committee (UPC) and CCRUM Hyderabad which is mainly concerned in pre-clinical and clinical research^[10].

Besides these government manufacturing units, the most leading company equipped with latest pharmaceutical technology and dedicated Research & Development in Unani pharmacy in private sector is Hamdard Laboratories (India) followed by Dawakhana Tibbiya College Aligarh, Dehlvi Remedies, New Shama Laboratories (P) Ltd, Rex (U&A) Remedies Pvt. Ltd, which have engraved out a significant capital market share for last few years in India and abroad too.

Introduction to Novel Drug Delivery System: Drug delivery essentially involved in development of controlled or site-specific delivery of drug that improves the bioavailability of drug and prevents premature degradation, enhance the drug uptake thus maintains drug concentration. Every drug molecule needs a delivery system to carry drug to site of the action upon administration to the patients. Delivery of drug can be achieved using developed dosage forms like tablet, capsule, creams, ointments, liquids, aerosols etc. The ultimate goal of Pharmaco-therapeutics is to maximize the therapeutic efficacy of drug while minimizing the related and associated adverse effects. There has been explosion in research on delivery option like

Transdermal, Nasal, and Ocular, Pulmonary etc. There are two main objectives of drug delivery system and they are as follows: (1) Drug Targeting (This means to deliver a drug to desired location in body) and (02) Controlled Release (This states to deliver a drug at desired rate over a desired length of time) ^[11-13].

Novel Drug Delivery Systems: It is a novel approach to drug delivery system (the method or process of administrating a pharmaceutical compound to achieve a therapeutic effect in humans or animals) that includes various newer methods of drug delivery like; Oral controlled release, Large-molecule delivery, Taste masking, Transdermal and topical delivery, Oral fast-dispersing dosage forms, Technology for insoluble drugs, Colon-specific delivery, Intranasal delivery/Pulmonary delivery, Vaginal/rectal delivery, Site-specific drug delivery; Targeting is the ability to direct the drug-loaded system to the site of interest- Implants, Liposomes, Microspheres/Microcapsules, Nanotechnology, Cochleates, Transferosomes, Magnetic micro-carriers ^[11-14].

Advantages of Novel Drug Delivery Systems: Increasing the efficacy, bioavailability and duration of drug activity, increase patient compliance, decreased dosing frequency, convenient routes of administration, improve targeting for a specific site to reduce unwanted side effects, mimic the circadian rhythm of particular diseases in order to optimize a drug's therapeutic power, reducing toxicity, enhancement of solubility and pharmacological activity, stability, sustained delivery and protection from physical and chemical degradation ^[14].

Novel Dosage Form for Unani System of Medicine: Our ancient classical literature describes dosage forms for both single and complex Unani medications. They have not been changed since ancient times, thus one of the primary obstacles facing the Unani system is the requirement for dosage forms evaluations based on modern methodologies with the goal to make it agreeable and pleasant for everyone. The use of Unani remedies is becoming more and more popular domestically and globally, however this industry is still underutilizing the need. It must start with the fundamentals of experimentation that are required research. Unani medicines were long disregarded for the development of novel formulations due to processing challenges and a lack of scientific support; however, current phytopharmaceutical research may deal with the requirements of Unani medicines in order to incorporate them into novel drug delivery systems. The new formulations are said to offer notable benefits above traditional medication compositions. It must be kept in the mind while transforming that the Unani principle must not be compromised in any way by these dosage form modifications.

Discussion: Need of Hour With respect to *Ilmul Saidla*
Now the work that should be done first in the field of *Ilmul Saidla* is to provide substantial scientific pharmaceutical experimental base to its philosophy, theories and concepts of *Saidla* on the lines of modern parameters. In this way Unani medicine could become more authentic and reliable. Incentives to drug manufacturers, entrepreneurs, and institutions for international propagation of Unani Medicine

globally and registration of products; exports and support for international market is possible when we justify our medicinal products on the scientific pharmaceutical parameters. The development of Unani Pharmacy in the present scientific era has been very considering and appreciable. Most pharmaceutical companies have adopted modern techniques and contemporary pharmaceutical equipment for manufacturing their products. The modern palatable dosage forms are also in practice like capsules, tablets, granules, syrup, sugar-free syrup, cream, lotion, ointment, toothpaste and cosmetic products. Some dosage forms used in eye cosmetics should be adopted such as eyeliners, eye shadows, false eyelashes, mascara, primers, eyebrow enhancers, and eye brushes, eye palettes; facial cosmetics such as foundation, primer, highlighter & shimmer, talcum, concealers & correctors, blush, bronzer, setting spray & powder, primer finder, foundation finder; cosmetics used in skincare such as moisturizer, cleanser, face mask; in lip care e.g. lip gloss, lipstick, lip liner etc. In Unani medicine, there should be the inclusion of modern dosage forms e.g. Parenteral, Inhalation, Oral Solid (Hard Gelatin Capsules, Soft Gelatin and cellulose Capsules), Ophthalmic, Aqueous Nasal Dosage Forms, Topical and Trans-dermal Delivery system, Solution Formulations, Freeze-Dried Formulations, Suspensions etc. Topical Novel Drug Delivery System such as Hydrogel and Novel Drug Dosage Form for Oral/Parenteral use such as Nanogel, Liposomes etc. based dosage form for Unani formulations can also be considered in recent scenario. Packaging and distribution of Unani medicines needs modification and improvement, and it should be rationalized and updated with a prime focus on promotion, administrative support, research and development. Modernization of techniques is very important for delivering effective Unani healthcare products; the regulatory authorities should provide guidelines and methodologies for research and evaluation from time to time to ensure the quality, safety, efficacy, cost-effectiveness, utilization, and best practices. The thrust areas of research in *Ilmul Saidla* are a modification of different dosage forms; standardization of single drugs, and compound formulations; scientific validation of every procedure mentioned in Unani classical text e.g., *Tadbeer-e-Advia* (Detoxification of drug), development of Standard operating procedure for a formulation of compound medicine etc.

Current Responsibilities for Unani Medicine: To improve aesthetic acceptability, taste and efficacy, Reduction in dosage, for acceptance of the system inconvenient forms that are not accepted by mass of patients as the first line of treatment should be minimized. Lack of novel drug delivery systems harming the future of Unani system of medicine. Therefore, with the help of advanced technology in the field of pharmaceutical sciences, Standardization of single and compound drugs and by adaptation of novel drug dosage forms and delivery system, we may take the Unani system of medicine at the edge where it must be, and vision of *Hakeem Ajmal Khan* and *Hakeem Abdul Hameed* can be achieved. For instance, inspired by *Ajmal Khan*, *Professor Dr. Salimuzzaman Siddiqui*, extracted the active ingredients as *Ajmaline*, from *Asrol* (*Rauvolfia serpentina* Benth). That shows the vision of our great thinker of Unani medicine, but it is very disappointing that this model could not reach where it should be. The following tables summarize the

different *classical Ashkal-e-Advia* (Ancient form of drug) and their possible novel dosage form in which they should

convert for the innovation in Unani system of medicines.

Table 2: Different Classical Ashkal-E-Advia (Ancient Form of Drug) And Their Possible Novel Dosage Form in Which They Should Convert For the Innovation in Unani System of Medicines: ^[15-17]

Classical form	Novel Dosage Form
Application of targeted drug delivery system	An uncertainty regarding the drug's potential to reach the targeted organ or part of the body is one of the problems with Unani treatment. Biologically active and plant extracts may be employed to create specific carriers, such as liposomes, transferosomes, ethosomes, microspheres, phytosomes, and nanoparticles, for specific medications.
Arq	To increase the potency and reduce the dose the Arq, it can be concentrated by doing the distillation repeatedly with same Arqor with new drug according to the need.
Atoos, Nafookh	It may improve into powder, inhalers and aerosol
Humool, Farzaja, Fateela	May convert into suppositories
Haboob and Aqraas	Conversion into mouth dissolving pills, sustained release formulation & sublingual pills. Drug extracts may be shaped into biodegradable microcapsules. With the help of suitable coating the bitter taste and quality of tablets and pills can be enhanced, and to avoid deterioration suitable excipients should be used.
Joshanda	Nanotechnology can formulate nano-sized granules that can be dissolved in hot water and consumed easily with less dosage. It may also convert into formulate dip bags by taking extraction of drugs.
Kustha Jaat	Tablets, capsules and Sublingual pills.
Lazooq	Development of transdermal drug dosage system as transdermal films incorporating Unani drugs
Majoon, Jawarish, Khameera Jaat	Sugar is used as preservatives, sweetening agent and vehicle, in large amount, that cannot be consumed by diabetic patients and the people who avoid too much sugar for their health. Therefore, it may convert into nano-sized particles or extracts form that can be filled into capsules or making tablet. And if preservation is needed, suitable preservatives can be used.
Mazooq	Chew gums, palatal mucoadhesive tablet.
Preservatives and packaging	To increase the shelf-life and avoiding microbial growth in Unani dosage forms, permitted preservatives as per WHO guidelines may be used. Packaging should be done to improve aesthetic acceptability, as well as to avoid deterioration.
Roghan	Oils can make into ointments with suitable water miscible bases for easy penetration and to wash out easily.
Safoof	Powdered herbs can make into capsule, to reduce the dose and efficacy powders can be made into nano-sized particles Extract makes to granules and prepare capsules tablets.
Sanoon	It can be changed into toothpaste
Sharbat	Decoction for sharbat should be concentrated, by extracting of drugs to prepare the syrup
Shiyaf	Eye drop
Advia Mufrada (Single drug)	Identification and extraction of active ingredient from Unani drugs, from this we can formulate sterilized dried plant powder/extracts together with the conventional additives to form the oral dosage forms, which include tablets, capsules, syrup and powders ready for suspension, tea bags and mouth spray. Concentrated liquid extracts tend to take effect quickly, so they are useful in cases where fast action is important, and even liquid dosage form for intravenous injection.
Zimad	Can be used as readymade powder with suitable medium to be mixed separately, or convert into such paste whose consistency is fine to use for the patients.

Role of Unani Institutes and Scholars/Researcher in *Ilmul Saidla*: Unani institutes are playing the vital role in the research in *Ilmul Saidla* with the help of young minds and experienced faculty across the country. Unani scholars must look for the evidence based answer of these theories and classical practice. First and foremost responsibility of the work rests with a Unani research scholar. Indeed purifying the past system in the light of present is the actual goal of research.

The scholars of *Ilmul Saidla* at different Post Graduates departments across the country like Ayurvedic and Unani Tibbia College, Karol Bagh, New Delhi, National Institute of Unani Medicine (NIUM) Bangalore, India, Ajmal Khan Tibbia College, AMU, Aligarh, UP, India etc have actively used contemporary and recent high-end technologies in the field of pharmaceutical research. Many modern dosage forms from Unani drugs have been studied and scientifically evaluated such as cream, medicated oil, effervescent granules, medicated sachet, foaming tooth paste, sugar-free syrup, effervescent tablet, extract tablets, emulgel, hair dye,

shampoo etc., as these forms are not mentioned in Unani classical pharmacy.

I also feel proud to be part of Ayurvedic and Unani Tibbia College, Karol Bagh, New Delhi, University of Delhi, India for being my mother institution during under graduation as well as post-graduation. As a research scholar, I am working on *Lazooq*; a classical Unani dosage form under the research entitled as "Pharmaceutical Design and Development of Lazooq into a Novel Dosage Form for Dysmenorrhoea". While doing my research, I felt that the researches that have been completed in the recent years should come to such platform where on one click anyone can approach the progress in the Unani drug dosage system. Therefore, in the following section the researches done by recent Unani scholars in different post graduate departments of *Ilmul Saidla* in the different Unani institutions of India (with respect to novel dosage form to design, development, evaluation, standardization, transformation and innovation) in classical Unani drug dosage and delivery system are described in tabular form below:

Table 3: Recent researches done by Unani scholars in the post graduate department of Ilmu Saidla, National Institute of Unani Medicine, Bangalore, with respect to modern pharmaceutical approach & novel dosage form:

S. No.	Year	Topic	Researcher
1	2012	Physicochemical Standardization of Some Unani Anti Inflammatory Formulations	Dr. S. Farhan Husain
2	2012	Stability Studies of Some Arqiyat	Dr. Feroz Khan
3	2012	Process and Product Standardization of Habbe Shifa	Dr. Asira Tarannum
4	2012	Studies on Majoon Aarad Khurma and It's Granules Prepared With Stevia, With Reference To The Standardization and Toxicity Evaluation	Dr. Mateen Ahmad Khan
5	2013	Physicochemical Characterization of Sunun Poste Mughilan, A Unani Tooth Powder And Evaluation of The Tooth Paste Composed Of Same Ingredients.	Dr. Mohammad Rashid
6	2013	Formulation And Evaluation of Unani Anti- Acne Cream.	Dr. Shahid Shah Chaudhary
7	2013	Evaluation of Stability Studies of Some Khamira Jat	Dr. Sadiya Noorul Basar
8	2013	Comparative Physicochemical Analysis of Kushta Nuqra Prepared By Different Methods of Detoxification	Dr. Mohammad Tariq
9	2014	Comparative Elemental Analysis of Various Samples of Kushtae Sadaf	Dr. N. Irfan Md
10	2014	Evaluation of Stability Studies of Sufoof-e-Sailan	Dr. Seema Rani
11	2014	Development of Standard Manufacturing Processes of Two Unani Formulations	Dr. Osama Akhtar
12	2014	Standardization of Qurse Tabasheer, A Unani Formulation, With Special Reference To Its Manufacturing Procedure	Dr. Waris Ali
13	2015	Formulation & Evaluation of Tablet Dosage Form of Safoofe Kharkhask A Unani Aphrodisiac Powder	Dr. Abdullah Tauheed
14	2015	Accelerated Stability Study of Majoon Falasfa	Dr. Mohd Younis
15	2015	Development of New Dosage Form of An Anti Diarrhoeal Unani Formulation	Dr. Ubaidul Hai
16	2015	Formulation And Evaluation of Unani Herbal Shampoo: A Comparative Study With Market Shampoo Formulation	Dr. Anjum Farah
17	2016	Design And Development of Unani Anti- Inflammatory Cream	Dr. Sana Fatima
18	2016	Pharmaceutico-Analytical Study of Kushta-e-Shangarf Prepared With Jozbua & Phitkari	Dr. Akhtar Ali
19	2016	Development of Sugar Free Granular Dosage Form With The Ingredients of Jawarish Jalinoos, Its Standardization And Stability Evaluation	Dr. Shah Nawaz
20	2016	Development of Standard Operational Procedure of Preparation of Sharbat Aloo Baloo With Emphasis On Qiwan Preparation	Dr. Imtiaz Ahmad
21	2017	Physicochemical Characterization of Safoof-e-Bars And Evaluation of Emulgel Composed of The Same Ingredients	Dr. Mohd Shadab
22	2017	Formulation And Evaluation of Naqu-e-Nazla As Granules	Dr. Mohd Zaigham
23	2017	Stability Study of Some Arqiyat	Dr. Rahamath Jabeen
24	2019	Design And Development of Ointment For Psoriasis	Dr. Muzayyana Khan
25	2019	Formulation Development And Standardization of Dosage Form Prepared From The Ingredients of Habbe Deedan	Dr. Shaista Fatima
26	2019	Formulation And <i>In Vitro</i> Evaluation of Tablet Dosage Form of Unani Anti-Diabetic Safoof (Powder)	Dr. Ghazi Jahangeer Rathor
27	2019	Physicochemical Standardization And <i>In Vitro</i> Evaluation of Roghane Khizab A Compound Formulation	Dr. Tasneem Kausar Khan
28	2020	Formulation And Evaluation of Vaginal Suppositories Prepared With Extract Of Barge Hina (Lawbonia Inermis L)	Dr. Fakeha Firdous K
29	2020	Design And Development of Unani Cream For Qooba (Dermatophytosis)	Dr. Hina Anjum
30	2020	Design Development And Evaluation of Efficacy of Antimicrobial Soap	Dr. Tabasiya Kawser
31	2020	Accelerated Stability Study of Safoof Muqliyasa And Safoof Mulayyin	Dr. Md Naquibuddin
32	2021	Formulation And Pharmacological Evaluation of A Unani Cream For Psoriasis	Dr. Sayma Bee
33	2021	Formulation Development And Standardization Granular Dosage Form Prepared From Murawwaqain	Dr. Shamsiya Khan
34	2021	Design And Development of A Unani Eye Drop (Qatur-e-Chashm) For Ramad (Conjunctivitis)	Dr. Baig Ruqaiyya Khatoon
35	2021	Optimization of The Binding Effect of Various Rabat (Binder) of Banadiqul Bazoore And Habbe Surfa	Dr. Mohd Anis Ansari
36	2022	Development And Evaluation of Unani Transdermal Patch For Nisyan (Dermeia)	Dr. Farhat Fatima
37	2022	Development And Standardization of Tablet Dosage Form From The Ingredients of Habbe Zeequn Nafas	Dr. Shahreen Naaz
38	2022	Development of Anti Inflammatory Cream And Its Efficacy Evaluation In Animal Model	Dr. Sumayya Sadia
39	2022	Formulation And Physicochemical Evaluation of Joshanda Munzije Balgham As Granules	Dr. Sabeena Shah

Table 4: Recent researches done by Unani scholars in the post graduate department of Ilmu Saidla, Ayurvedic and Unani Tibbia College, Karol Bagh, New Delhi with respect to modern pharmaceutical approach & novel dosage forms:

S. No.	Year	Topic	Researcher
1	2014	Pharmaceutical Development of Zuroor-e-Qula in the Gel form and its Standardization with the Standard Operating Procedure (SOP)	Dr. Zakir
2	2014	Pharmaceutical Development of Marham Zangar in a new Dressing Material for Wound Healing and its Standardization with the Standard Operating Procedure (SOP)	Dr. Shakeel Ahmad
3	2015	Pharmaceutical Development of an Antiemetic Transdermal Unani Formulation with Standard Operating Procedure (SOP)	Dr. Mohd Nauman Saleem
4	2015	Pharmaceutical Development of Transdermal Unani Female Contraceptive Formulation	Dr. Tarannum
5	2015	Pharmaceutical Design & Development of Unani Formulation in the Pessary Form for Uterine Prolapse with its Standard Operating Procedure (SOP)	Dr. Sabiha Ali
6	2015	Pharmaceutical Development of a Unani Nutraceutical Formulation with Standard Operating Procedure (SOP)	Dr. Mohd Shabuddin
7	2015	Design & Development of a Unani Cosmeceutical Formulation for Skin Care	Dr. Farheen Begum
8	2015	Pharmaceutical Evaluation of Ma'ul-Zawi-ul-Ajsad as Nano Particle Drug Delivery System	Dr. Mohd Adnan
9	2016	Pharmaceutical Design & Development of a Unani Fast Dissolving Dosage Form	Dr. Shadab Alam
10	2016	Pharmaceutical Design & Development of a Unani Emulgel Dosage Form	Dr. Shameem
11	2016	Pharmaceutical Design & Development of a Unani Mucoadhesive Vaginal Tablet	Dr. Anju
12	2020	Pharmaceutical Designing and Development of Lozenge as a New Unani Dosage Form	Dr. Sufia Laiq

13	2020	Pharmaceutical Evaluation & Standardization of Amal-e-Iqla along with Analysis of Namakiyaat (Organic Salts)	Dr. Shabana
14	2020	Scientific Validation & Standardization of Amal-e-Ehraq – A Unani Pharmaceutical Process	Dr. Raghubanshi
15	2021	Pharmaceutical Design & Development of Unani Sunscreen Formulation	Dr. Deeba Siddiqui
16	2021	Pharmaceutical Design & Development of Unani Nanogel for Topical Application in Skin Diseases	Dr. Adnan
17	2022	Pharmaceutical Design & Development of Unani Decongestant Nasal Drop	Dr. Fatima Anjum
18	2022	Pharmaceutical Design & Development of Unani Suspension for Amraze Meda (Gastric Disorders)	Dr. Tabsheer
19	2022	Pharmaceutical Evaluation & Standardization of Kuhl	Dr. Bushra Parveen
20	2022	Nutraceutical Evaluation & Standardization of Sikanjabeen	Dr. Bushra Sabir
21	2023	Pharmaceutical Design & Development of Qairooti in Roll-on Dosage Form	Dr. Asif
22	2023	Design & Development of Unani Calcium containing Chewable Tablet	Dr. Aaisha Farheen

Table 5: Recent researches done by Unani scholars in the post graduate department of Ilmul Saidla, Ajmal Khan Tibbiya College, Aligarh Muslim University, AMU, UP, with respect to modern pharmaceutical approach & novel dosage form:

S. No.	Year	Topic	Researcher
1	2022	Design & Development of polyherbal Unani Anti-Arthritic tablet	Dr. Moiz Alam
2	2022	Redesigning of Araaq-e-Ajeeb to topical aerosol and its physico-chemical pharmacological evaluation	Dr. Zainab Zaki
3	2022	Remodelling of Unani pharmacopeial formulation used for management of vulvar pruritus into nano emulgel along with its characterization	Dr. Sunaiba Manzar
4	2022	Development of Tiryqa-e-Medainto effervescent tablet along with its pharmaceutical analysis	Dr. Farha
5	2023	Design & Development of Anti Acne Cream alongwith physico-chemical standardization and antimicrobial evaluation	Dr. Shabnam
6	2023	Comparative analysis of extract of Unani Drug by different extraction techniques	Dr. Mehar Fatima

Conclusion

After going through the researches in the concerned field which are done by post graduate *Unnai* Scholars under the supervision of distinguished and hardworking teachers, it is concluded that the newer researches of different classical Unani drug dosage forms must not left as research thesis only; it must be included in the mainstream of Unani drug delivery system and must come into practice. These valuable inventions must not be left out after their genesis. They must be applied by every Unani clinician for medication and required purposes and new technologies should be invented and time to time up gradation of drug dosage form should be done.

Future Prospects: Every new research should follow the all steps of drug trial (characterization, *in vitro* and *in vivo* studies, human trial) must be done and then every new design must come to the humankind to take the future of Unani at the new edge domestically and globally.

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Conflict of Interest

Not available

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