



DESIGN AND DEVELOPMENT OF UNANI FACE PACK (UFP) FOR SKINCARE.

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ABSTRACT

Contrary to the common belief that the cosmetics and perfumery belong to the modern times, as a matter of fact, well before the coinage of the word cosmetics, from the Greek language *kosmetikos* meaning adorn or embellish (for making more attractive, beautiful & decorated), the Arab physicians had laid foundation of a new branch of knowledge in the form of *Ilm-ul-zeenah* (science of beauty), i.e. nothing but cosmetology. Nowadays revolution comes in the branch of cosmetics, and it has become most popular branch. However, in the modern cosmetic preparations, numerous synthetic chemicals are used which have a lot of side effects. Now, the world is revisiting the herbal heritage for skincare in non-conventional stream of medicine, such as Unani medicine. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than the synthetic ones. In Unani system of medicine, there is a broad range of preparations derived from natural sources for skincare. Numerous formulations are mentioned in the Unani classical literature for skincare. The formulations are named as *ghaza*, *ghamra*, *ghaliya*, *ghusool*, *ubtan*, *kohal* etc. But the uses of above mentioned formulations in the prescribed dosage forms are not easy as these are time taking and involve lengthy and laborious procedures for the users. So, there is a need to improve the processing of these dosage forms which can be used easily. There is no formulation available in Unani cosmeceuticals to combat such situations and compete modern cosmetics. Hence, a pharmaceutical strategy has been envisaged to overcome these shortcomings. An innovative approach has been made to formulate, design and develop a user-friendly dosage form for skincare, which is ready to use. Thus, Unani Face Pack (UFP) was designed and developed for skincare. The ingredients were selected after an exhaustive search of Unani classical literature. They possess the *jali* (detergent) and *tehseen-e-laun* (complexion enhancer) properties. In the current literature, all ingredients have been reported as having significant anti-microbial and anti-oxidant activity. The UFP was evaluated by a battery of physico-chemical tests. Based on the observations and results of the undertaken study, it is concluded that UFP based on Unani single drugs is a best Unani cosmeceutical formulation for skincare.

KEYWORDS: Unani cosmeceutical formulation, *jali*, *tehseen e laun*.

INTRODUCTION

It is a well-known fact that non-conventional streams of medicine always played significant role in meeting the global healthcare needs. The World Health organization (WHO) has defined these streams as traditional medicines in terms of "the health practices, approaches, knowledge and beliefs in corporation plant, animal and mineral-based medicines, spiritual therapies, manual techniques and expertise, applied singularly or in combination to treat, diagnose and prevent illness or maintain well being".^[1] In India, these systems of medicine are termed as AYUSH- an umbrella of Ayurveda, Yoga & Naturopathy, Unani, Siddha and Homoeopathy. Historically, these systems are considered

to be traditional or Indian in origin or the systems of medicine, which have come to India from outside and got assimilated into Indian culture, are known as Indian Systems of Medicine (ISM).^[4]

Unani system of medicine is one of them. Unani system of medicine is based on the knowledge of achieving perfect physical, mental and social health. The primary goal of Unani system of medicine is the maintenance or promotion of good health and prevention or restriction of disease(s). The vast diversity of Unani drug dosage forms (UDDFs) has no parallel in any stream of medicine even in the conventional medicine of today. It is interesting to note that in spite of the popular Unani

drug dosage forms (UDDFs), a separate class of UDDFs had also been designed and developed for external use or for the purpose of cosmetic.

The *ashiya-e-muzayyana*/cosmetics are the utility products used extensively throughout the world for maintaining and improving general appearance for face and other parts of body. The concept of maintaining health and beauty, i.e., *Zeenat wa arash* (cosmetics) are also mentioned in the Unani manuscripts and celebrated writings of great Unani physicians, where they wrote about the natural ways and measures for the purpose of cosmetics. Contrary to the common belief that the cosmetics and perfumery belong to the modern times, as a matter of fact, well before the coinage of the word cosmetics, from the Greek language *kosmeticos* meaning adorn or embellish (for making more attractive, beautiful & decorated).^[10] the Arab physicians had laid foundation of a new branch of knowledge in the form of *Ilm-ul-zeenah* (science of beauty), i.e. nothing but cosmetology.

Nowadays revolution comes in the branch of cosmetics, and it has become most popular branch. However, in the modern cosmetic preparations, numerous synthetic chemicals are used which have a lot of side effects. Now, the world is revisiting the herbal heritage for skincare in non-conventional stream of medicine, such as Unani tib. In Unani system of medicine, there is a broad range of preparations derived from natural sources for skincare. Numerous formulations are mentioned in the Unani classical literature. The formulations are named as *ghaza*, *ghamra*, *ghaliya*, *ghusool*, *ubtan*, *kohal*, *khizab*, *nura*, *mascara*, *surma*, *roghan*, *marham*, *tila*, *zimad* etc. But the uses of above mentioned formulations in the prescribed dosage forms are not easy as these are time taking and involve lengthy and laborious procedures for the users. These are not available in the market as ready to use formulations. So, there is a need to improve the

processing of these dosage forms which can be used easily. There is no formulation available in Unani cosmeceuticals to combat such situations and compete modern cosmetics. Hence, a pharmaceutical strategy has been planned to overcome these shortcomings. An innovative approach has been made to formulate, design and develop a user-friendly dosage form for skin care. The present study is based on the design and development of a Unani Face Pack (UFP) for skincare along with its Standard Operating Procedure (SOP).

The concept of *dalk* (massage) is the most common and widely practiced for restorative, preventive as well as therapeutic purposes. Massage is an oldest practice, which was used almost all the civilization in the history and evidence of this are present in the several manuscript.^[3] The Unani Face Pack (UFP) is to be applied on the face and massaged for 1-2 minutes after which it should be applied on skin properly and left over up to it gets dry. Afterwards wash the face with normal water. The UFP cleanse the dirt and dust from the skin, closes the open pores, and improves the complexion and texture of skin. The purpose of this study is to introduce modern concept of beautifying agents in Unani system of medicine.

MATERIAL AND METHODS

The ingredients of UFP were procured from Khari Baoli market, old Delhi. These were authenticated by CSIR-NISCAIR New Delhi. The following ingredients were used in the test formulation:

Table 1: List of ingredients included in the UFP

S. No.	Name of Ingredients	Scientific Name	Part Used
1.	Darchini	<i>Cinnamomum zeylanicum</i>	Bark
2.	Hulba	<i>Trigonella foenum</i>	Seeds
3.	Kharpaza	<i>Cucumis melo</i>	Seeds
4.	Mamiran	<i>Coptis teeta</i>	Root
5.	Neem	<i>Azadirachta indica</i>	Leaves
6.	Turb	<i>Raphanus sativus</i>	Seeds
7.	Gil-e-multani	<i>Multan clay</i>	Clay

1. Foreign matter separation: All ingredients were inspected with unaided eyes for the presence of impurities and foreign matter, and which were removed.

2. Drying: All drugs were dried under shade to remove the moisture.

3. Preparation of Unani Face Pack (UFP)

3.1. Powdering of drugs

1. All ingredients were taken in equal quantity.
2. Before powdering each sample, the mortar, pestle

and grinder were properly cleaned.

3. All ingredients were pounded in mortar and pestle before grinding.
4. All ingredients were powdered in a mixer grinder and sieved through using sieve No. 100.^[9]
5. The grinding and sieving was repeatedly done up to complete sieving of powder ingredients.
6. Finally, the finished product was packed in the sterilized closed container.

Mixing of Ingredients in Base

Before the preparation of UFP, various brands of herbal face pack available in the market were surveyed for the determination of base for UFP. There are many types of bases, namely water base, gel base, cream base etc. used in the synthetic products. However, in the Unani classical literature, any cosmetic formulations for the purpose of skin care has been mentioned in the powder form applied as paste. Thus, water base was selected for incorporation of crude powder of drugs for UFP as it is inert, compatible and cost effective.

1. All ingredients were powdered finely by using sieve No. 100.
2. The powdered drug in the quantity of 20 grams was mixed with distilled water by using spatula up to its consistency till it was converted into paste.^[9]

3. 15% PG (propylene glycol) was added drop by drop and mixed thoroughly in a mortar.
4. Preservatives, namely 0.5% sodium methyl paraban and 0.5% propyl paraban were added and few drops of orange essential oil were also added for fragrance.^[2]
5. The prepared face pack was packed in a well cleaned closed container.

Table 2: The composition of final formulation was as follows

S. No.	Ingredient	Weight	Ratio
1.	Powder of all the seven ingredients of UFP	20 grams	33 %
2.	Distilled water	40 ml	66 %
3.	Propylene glycol (PG)	9 ml	15 %
4.	Sodium methyl paraban	0.35 gram	0.5 %
5.	Propyl paraban	0.35 gram	0.5 %
6.	Orange essential oil	Few drops for fragrance	

Evaluation of Physico-Chemical Parameters of Unani Face Pack (UFP)

The prepared Unani Face Pack (UFP) was subjected for the following physico-chemical parameters:

1. Organoleptic Characteristics

- a) **Appearance:** Appearance was recorded according to the consistency whether semisolid or semi-liquid.
- b) **Determination of color:** The color of UFP was recorded under sunlight.
- c) **Determination of odor:** The UFP was examined for odor by slow and repeated inhalation of air over the material.
- d) **d. Homogeneity, smoothness, and stickiness** were also recorded.

2. Feel and consistency

The feel and consistency of UFP was noticed by rubbing the formulations between two fingers. Its smoothness or grittiness was also observed and recorded.^[5]

3. Determination of pH

pH of 1% solution- 1 gram of UFP was dissolved in 100 ml of water, and filtered. The pH was checked with a standardized glass electrode.

pH of 10% solution- 10 grams of UFP was dissolved in 100 ml of water, and filtered. The pH was determined with a standardized glass electrode.^[6]

4. Particle size analysis

This parameter was carried out by using microscope.

5. Determination of Washability

The UFP was applied on the skin and then ease and extent of washing with water was checked manually.^[2]

6. Determination of Spreadability

Spreadability of UFP was determined as per method of Muttimer et al. The UFP (in the quantity of 3 grams) was placed on this ground plate. The UFP was then sandwiched between this plate and another glass plate having the dimensions of the fixed ground plate and provided with the hook. A 1 Kg. weight was placed on the top of the two plates for 5 minutes to expel air and to provide a uniform film between the plates. Excess of UFP was scrapped off from the edges. The top plate was then subjected to a pull of 50 grams, with the help of a string attached to the hook and the time (in seconds) required by the top plate to cover a distance of 10 cm was noted.^[7]

The Spreadability was calculated using the following formula:

$$S = m. (l/t)$$

Where,

S = Spreadability l = length of the glass slid

t = time m = weight tied to the upper slid

7. Determination of Viscosity

The UFP was subjected to viscosity study using Brookfield digital viscometer.

8. Determination of Moisture Content

Three grams of UFP was spread uniformly and thinly in

a shallow petri dish and heated at a regulated temperature of $105\pm 1^\circ\text{C}$ till constant weight and cooled in desiccators, weighed and calculated the percentage loss with respect to UFP.^[6]

9. Skin Sensitivity / Patch Test

The skin sensitivity and non-irritancy of UFP was evaluated by patch test. It was performed by application on healthy volunteers to evaluate its safety. Though the formulation contained all natural ingredients, which are in use for skincare since long time but for the safety point of view the following three parameters are done, i.e., primary irritation test, delayed hypersensitivity and photo irritation or photo allergy.^[8]

Primary irritation

In this test, 20 healthy human volunteers were selected. Definite quantity of UFP was applied on the forearm region. Prior to the application, any signs of irritation observed were noted. No visible reaction or erythema or intense erythema with edema and vesicular erosion occurred. Both formulations were evaluated by same procedure and possible reactions with different degrees like -No Irritation, + Mild irritation, ++ Moderate irritation, +++ High irritation.^[8]

Delayed hypersensitivity

Delayed hypersensitivity test was performed with the same procedure as in primary irritation test by increasing the application time and observation time. After washing of scrub from the skin the reactions were measured for 2 hours of time and noted down.^[8]

Photo irritation/ Photo allergy

Some ingredients may produce an allergic reaction only when exposed to light. This test was aimed to know the

possible photo allergic reactions of the prepared UFP on exposure to sun light on application. Both the formulations were applied as in the Primary irritation test and the individuals were asked to expose themselves for sun light and possible reactions in the terms of itching, allergy, irritation and signs of redness after washing was measured and noted down.^[8]

10. Stability Study

The stability / shelf life study of UFP was also carried out at room temperature by visually examination for appearance, odor, consistency and contamination at the interval of 24 hours. Then, weekly observation was done for visual changes up to 6 months.

11. Determination of Microbial Load

UFP was evaluated for Total Bacterial Count, total fungal count, presence of *E. coli*, *Salmonella*, *S. aureus* and *Pseudomonas* by Shree Krishna Analytical Services, New Delhi.

RESULT AND DISCUSSION

The final preparation of UFP was found most suitable and appropriate formulation. It had all characteristics of a standard face pack for local application, such as appearance, smoothness, homogeneity, stickiness, elegance, pH, spreadability and viscosity. The UFP prepared was **greenish brown** in colour. Its smoothness, homogeneity and odor made it more user-friendly. Organoleptic characteristics of prepared UFP were found to be of a standard formulation.

Table3: Organoleptic Characteristics of UFP

Organoleptic characteristic	UFP	Organoleptic characteristic	UFP
Appearance	Paste	Homogeneity	Homogenous
Color	Greenish-Brown	Smoothness	Smooth
Odor	Orange like	Stickiness	Moderately sticky

The feel of the UFP was smooth and grittiness was noticed by rubbing the formulation between two fingers. The formulation was sticky and not freely flowed when poured on floor. The washability was found good. The particle size of UFP was found to be less than 20 micron.

The mean pH in 1% and 10 % were 6.66 ± 0.13 and 6.88 ± 0.14 , respectively which was in well accordance with

the pH (4-7) of skin. The mean values of spreadability (21.9 ± 0.264 g.cm/ sec), viscosity (2539 ± 25.36 cps.), moisture content (89.733 ± 0.004 %) were all in good accordance to a standard cosmeceutical formulation for local application purpose.

Table 4 : pH, Spreadability, Viscosity and Moisture Content of UFP

S. No.	pH (1%)	pH (10%)	Spreadability (g.cm/sec)	Viscosity (cps)	Moisture Content (in %)
1.	6.53	6.72	21.8	2510	89.8
2.	6.67	6.94	22.2	2550	90.1
3.	6.79	6.98	21.7	2557	89.3
Mean \pm SD	6.66 \pm 0.13	6.88 \pm 0.14	21.9 \pm 0.264	2539 \pm 25.36	89.733 \pm 0.004

In skin sensitivity/ patch test during primary irritation test out of 20 individuals only one showed sign of mild irritation. In photo irritation test and delayed hypersensitivity test only two individual showed mild

irritations. It highlights that the formulation is safe for use as maximum individuals showed no irritation on its application.

Table 5: Result of Patch Test of UFP

S. No.	Name of test	Number of volunteers	Result
1.	Primary irritation Test	19	No irritation (-)
		01	Mild irritation (+)
2.	Delayed hypersensitivity test	18	No irritation (-)
		02	Mild irritation (+)
3.	Photo irritation test	18	No irritation (-)
		02	Mild irritation (+)

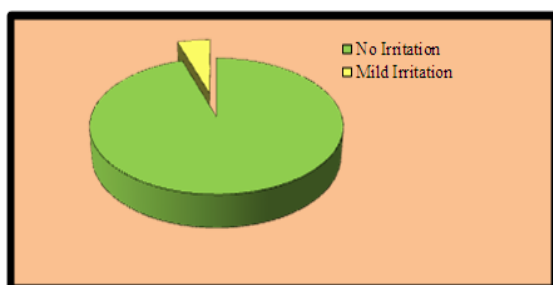


Fig 1: Primary Irritation Test of UFP

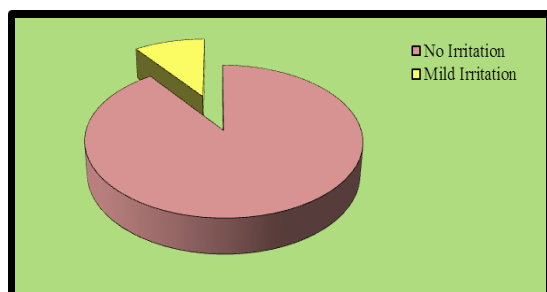


Fig 42: Delayed hypersensitivity Test and Photo sensitivity test of UFP

The stability study of the prepared UFP was also carried out for six months to evaluate any physico-chemical change. No change in colour and odor was noticed in it. A little change in pH of 1% solution was noticed in after 6 months, changing from 6.67 to 6.11 and no contamination occurred in it after 6 months.

Table 5: Stability study of UFP

S. No.	Weeks	Appearance	pH (1%)	Odor	Contamination
1.	0	Greenish-Brown	6.67	Orange like	Negative
2.	1	Greenish-Brown	6.65	Orange like	Negative
3.	2	Greenish-Brown	6.43	Orange like	Negative
4.	4	Greenish-Brown	6.36	Orange like	Negative
5.	12	Greenish-Brown	6.21	Orange like	Negative
6.	24	Greenish-Brown	6.11	Orange like	Negative

The microbial load showed the total bacterial count (4850 microorganism / gram), total fungal count, *E. coli*, *Salmonella*, *pseudomonas* and *S. aureus* were absent per

gram. The studies suggested that the prepared UFP was physico-chemically stable and possess characteristics of a standard cosmeceutical formulation for skin care.

Table 6: Microbial Load of UFP

Test	Result
Total Bacterial Count	4850 microorganism / gram
Total Fungal Count	Absent / gram
<i>E. coli</i>	Absent / gram
<i>Salmonella</i>	Absent / gram
<i>S. aureus</i>	Absent / gram
<i>Pseudomonas</i>	Absent / gram

CONCLUSION

The undertaken study was chosen as there is a felt-need of the hour to design and develop the existing Unani formulation, into more user friendly form, i.e. Unani Face Pack (UFP). Further, its standardization was carried out after evolving of Standard Operating Procedure (SOP) which is not available at present.

A lot of cosmeceutical formulations available in the market for skin care but they all contain harmful chemicals. The Unani medicine provides a succor to this situation. Almost all Unani pharmacopoeias mention a number of cosmeceutical formulations for skin care.

The main hindrance in getting the desired therapeutic efficacy of Unani face pack and its reproducibility is absence of the physico-chemical data and standard operating procedure (SOP).

In view of this situation, the standard operating procedure (SOP) and its development into innovative forms has been carried out.

The Unani Face Pack (UFP) was design and developed in the light of modern cosmeceutical formulations. The Unani Face Pack (UFP) is to be applied on the face and massaged for 1-2 minutes after which it should be applied on skin properly and left over up to it gets dry. Afterwards wash the face with normal water. The UFP cleanse the dirt and dust from the skin, closes the open pores, and improves the complexion and texture of skin. The purpose of this study is to introduce modern concept of beautifying agents in Unani system of medicine. Besides its exalted position in the classical Unani literature, the Unani cosmeceutical dosage forms have many shortfalls, especially in its application, desired efficacy and shelf life/stability. These disadvantages lead to non-availability of this product in the open market, thus, depriving the people from a time tested, effective and harmless cosmeceutical formulation.

Keeping in view the aforementioned situation, a pharmaceutical strategy was devised to develop, its modified form as Unani Face Pack (UFP), converting all shortcomings into advantages with standard operating procedures (SOPs).

The physico-chemical parameters for standardization of UFP were done. It had all characteristics of a standard face pack for local application, such as appearance, smoothness, homogeneity, stickiness, elegance, pH, adhesiveness, spreadability and viscosity.

Further, a clinical study is warranted to evaluate therapeutic efficacy and safety of the newly designed and developed formulation. This would fill the gap of evidence-based Unani therapeutics as well as pharmaceuticals.

CONFLICT OF INTEREST: None.

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