PREPARATION AND STANDARDIZATION OF NOVEL SKIN COMPLEXION IMPROVING FORMULA

Jayathilake MGMKK*[1], Wimalasiri YSG[2], Ishara MDP[3]

[1]Undergraduate, Institute of Indigenous Medicine, University of Colombo.

[2]Senior Lecturer, Institute of Indigenous Medicine, University of Colombo.

[3]Lecturer (Probationary), Institute of Indigenous Medicine, University of Colombo.

*Corresponding Author

Jayathilake M.G.M.K.K.

Undergraduate, Institute of
Indigenous Medicine,
University of Colombo.

ABSTRACT

Ayurveda and Traditional Medicinal System in Sri Lanka mention hundreds of skin complexion improving formulae. Therefore, this study was aimed to study about those formulae and develop a novel cosmeceutical preparation using that knowledge. *Rakta candana, Candana, Daru haridra, Haridra, Manjishta, Madhuka, Lodhra, Ushira, Kushta and Masura* are the most used ten drugs in Ayurveda. *Lepa* method is the most used drug preparatory method in Ayurveda. Hence using these ten drugs and *Lepa* method the novel cosmeceutical preparation has prepared as a face pack. Most prominent pharmacological properties of face pack were *Madhura*, *Tikta*,

Kashaya Rasa, *Ruksha*, *Guru Guna Sita Virya* and *Katu Vipaka* which pacify *Pitta Dosha* and beneficial for improving skin complexion. Physicochemical parameters of face pack were as follows: pH value of sample was 4.70. Moisture content of sample was 0.22%. Total ash was 2.90%. Acid insoluble ash was 3.19%. Water soluble ash was 2.24%. Presence of alkaloids, tannins, phenolics and terpenoids could be seen in sample which were useful in the quality control and standardization of novel face pack. Skin complexion improving effect could be proven conceptually via Ayurveda pharmacological properties of face pack and scientifically via its wide range of phytochemical components. In conclusion, this novel face pack would provide safe and effective action on skin complexion. However, to validate its therapeutic utility to scientific community, preclinical and clinical studies are essential.

KEYWORDS: Skin complexion, face pack, standardization.

1.1 INTRODUCTION

Beauty, the quality that gives pleasure to the senses, is perhaps the desire of every human being on earth. Some are born beautiful and some are made beautiful. It is the natural desire of mankind to have a healthy and glamorous skin with attractive personality. But very few are blessed with naturally perfect skin. People always have great concern about their health and beauty. Beauty is not just a visual experience; it is characteristic that provides a perceptual experience to the eye, the ear, the intellect, the aesthetic faculty, or the moral sense. It is the quality that gives pleasure meaning or satisfaction to the senses.[1]

In Ayurveda inner and outer beauty are intimately related. Outer beauty is the perfection of what is visually perceived. Inner beauty relates to inner qualities of being, including emotional status and mental abilities.[2] Ayurveda gives emphasis on lifestyle modifications such as following daily regimens and seasonal regimens. These include guidelines about eating right food, at the right time, in right way, based on the seasons and one's constitution; regularizing bedtime rituals, practicing meditation, exercises, maintaining beauty of body, mind and soul.[3,4]

In traditional medicinal system in Sri Lanka mainly describes five components of natural beauty of a woman. Those are *Kesha* (Hair), *Danta* (Teeth), *Chavi* (Skin), *Mamsa* (Figure), *Vayah* (Age). A woman having all these five aspects is known as *Panca Kalyani*.

In today's era, beauty is very much essential to be one in thousand faces. It is essential for the preservation, restoration or bestowing of bodily beauty and in the surgical correction of disfigured physical defects. Beauty as in common is related to skin unanimously. Beautiful skin of person gives perceptual experience of satisfaction.[5]

The concept of using herbs for the beautification is well described in Ayurveda literature. Since centuries the herbal extracts, as a whole or part, have been used for various ailments of the skin and also for overall appearance. A great demand from Ayurveda in the field of cosmetology has been established due to its unique concept about beauty and effective, cheaper, and long-lasting beauty therapy without any side effect.[6]

Ayurveda herbal medicines act as nutri-cosmetics which nourish the tissues and micro channels of the body. They improve circulation, there by revitalizing the tissues. One of the

most important reasons for the increased use of Ayurveda Beauty enhancing formulae are that this can clearly bring out a clear glowing skin with true inner happiness and relaxation.

At present due to the busy lifestyle schedules, people used to take instant food which has no nutritional value. Due to the unfulfilment of enough body nutrition, exposure to the polluted unhealthy environment, the discoloration of skin and the features of aging could be seen commonly among the people. Hence the high expenditure on skin care among the population has led to many more skin problem of pigmentations, loss of complexion, skin dryness etc. As the demand on skin whitening or the skin complexion improving cosmetics have increased, it withholds the market at higher stand.

Whitening products mostly prevailing in today market are consisting of chemicals like heavy metals which are harmful to the skin. Applying of these products lead to many side effects such as skin rashes, burning of skin, skin irritation, excessive redness of skin, dryness of skin, cracking of skin etc. Therefore, at present world trend is driven on the concept of herbal skin care. Hence recently, world trend turns to use medicinal plant products in healthcare system. Global need of herbal medicine has resulted in growth of natural product markets and improvement in traditional systems of medicine.

This study is to study about skin complexion improving formulae mentioned in Ayurveda and TM. Also this study based on the overcoming of current problems regarding skin and complexion by inventing a novel face pack(*Mukha Lepa*) which will be prepared according to the *Lepadi Vidhi* of Ayurveda with the use of selected 10 drugs which mostly mentioned in skin complexion improving formulae in *Vrddhatraya* and *Laghutraya*. The applicability of the novel cosmeceutical formula considering with pharmacological properties (pharmacodynamics & pharmacokinetics) of the 10 drugs are also discussed in this study. Further, this study possesses basic standardization procedures on new formulated face pack also.

1.2 AIMS AND OBJECTIVES

1.2.1 General Objective

- To elicit different skin complexion improving formulae mentioned in Ayurveda and traditional medicine.

1.2.2 Specific Objectives

- To compile a collection of different formulae used for skin complexion improvement mentioned in *Vruddhatraya* and *Laghutraya.*

- To compile a collection of different formulae used for skin complexion improvement mentioned in *Khanda Vaidya Grantha*, *Thalpathe Piliyam.*

- To develop a novel cosmeceutical preparation for improving skin complexion.

- Analyze the pharmacological properties (pharmacodynamics & pharmacokinetics) of the drugs used in the novel cosmeceutical preparation.

- Standardization of the novel cosmeceutical preparation.

1.3 LITERATURE REVIEW

Ayurveda is not only the science of medicine, but it is the soul of leading healthy life.[7] Ayurveda believes that the basic elements of Universe is *Panchamahabhuta* viz. *Akasha*, *Vayu*, *Aap*, *Teja* and *Prithvi* to what basically we can also depict as Nature.[8]

The beauty of nature can have a profound effect upon our senses, indirectly on our skin also. Skin is the most widely spread sense organ. The healthy skin reflects the healthy body. The skin is considered as a protective covering for more delicate & functionally sophisticated internal viscera.[9] Because of its visibility skin reflects our emotions & some aspects of normal physiology. Many interesting factors such as age, immunity, nutrition, hygiene, circulation etc. are totally responsible for the appearance and health of the skin. When these are in perfect harmony a person radiates with inner and outer beauty.[10] Ayurveda also believes that the serenity and contentment of true beautiful face is the direct reflection of *Ojas* (the substance that maintains life) which is the by-product of a healthy, efficient, contented physiology.[11]

Skin care is one of the most important components of natural beauty, no matter what your age, skin tone, or skin type. Skin is a reflection of an individual's health [12]. *Twak* (Skin) gives clue to ones *Ayurveda* constitution (*Dosha*). This is usually understood by the type of skin one has. *Acharya Sushruta* described the process of formation of *Twak* in the developing fetus. He says that after fertilization of ovum *Twak* develops just like a cream on the surface of milk in the uterus during the course of development of *Garbha*, differentiation of the layers of the skin takes place and is produced by all three *Doshas*, particularly by the *Pitta Dosha.*[13] When *Pitta Dosha* is decreased and vitiated, the skin complexion is also

diminished. *Bhrajaka Pitta* is the accountable subtype which responsible for the vitiation and discoloration of the skin.[4] Ayurveda has mentioned a particular type of skin for a particular type of *Prakṛuti* (body constitution). The skin care principles are applicable according to the type of *Prakṛuti* of an individual.

Ayurveda Classics mentioned some of the specific measures for enhancement of skin complexion. *Acharya Caraka* has mentioned *Varṇya dashaka*; a group of ten drugs which improve complexion and impart bright colour to the skin. Daily skin care in the context of *Swasthavrtta* (regimen for a healthy person) also has been described, such as *Abhyanga, Udvartana, Snana, Lepana etc*.

Mukha lepa (face pack) is one of the well-known effective and oldest method which is spread over the face and left for some time to cleanse and improve the condition of the skin. It is allowed to dry or to set with the object of improving the appearance of the skin by producing a transient tightening effect as well as by cleansing the skin.[14] Different types of skin need different types of face packs (*Mukha lepa*). The herbal paste which is applied on face to treat acne, pimple, scars, marks and pigments are known as *Mukha Lepa* (face pack) in Ayurveda.[15] *Mukha lepas* help us looking after skin and also prove its worthiness by increasing circulation of the blood within the veins of the face. *Mukha lepas* are helpful for preventive and curative aspects of any skin problems. *Lepa* preparation are applied to skin prevents metabolism of drugs in the liver and increases the bioavailability of the drug and also provides its effects directly on the site of action.[5]

2.1 METHODOLOGY

2.1.1 Literature study

Different formulae used for skin complexion improvement mentioned in *Vriddhatraya, Laghutraya, Khanda Vaidya Grantha* (*Veluma* 1-50), *Thalpathe Piliyam* (*Kanda* 1-21) were collected from the Library of the Institute of Indigenous Medicine, University of Colombo, Rajagiriya. The collected formulae were categorized and analyzed.

2.1.2 Selection of drugs and the method of preparation of novel cosmeceutical preparation

10 drugs were selected which mostly mentioned in skin complexion improving formulae in *Vriddhatraya* and *Laghutraya.*

Table 1: Selected drugs.[16][17][18][19][20][21][22][23][24]

No	Sanskrit name	Vernacular names	Botanical name	Family
1	*Rakta candana*	*Rath handun*	*Pterocarpus santulinus*	FABACEAE
2	*Candana*	*Sudu handun*	*Santalum album*	FABACEAE
3	*Daru haridra*	*Daru haridra*	*Berberis aristata*	SANTALACEAE
4	*Haridra*	*Kaha*	*Curcuma longa*	BERBERIDACEAE
5	*Manjishta*	*Velmadata*	*Rubia cordifolia*	ZINGIBERACEAE
6	*Madhuka*	*Velmi*	*Glycyrrhiza glabra*	RUBIACEAE
7	*Lodhra*	*Loth sumbul*	*Symplocos racemosa*	FABACEAE
8	*Ushira*	*Sevendara*	*Vertiveria zizanioides*	SYMPLOCACEAE
9	*Kushta*	*Suvanda kottan*	*Saussurea lappa*	POACEAE
10	*Masura*	*Maisur parippu*	*Lens culinaris*	COMPOSITAE

Mukha Lepa method was selected as the method of preparation which mostly mentioned in skin complexion improving formulae in *Vriddhatraya* and *Laghutraya.*

Bee's honey was selected as the liquid media which mentioned in skin complexion improving formulae in *Vriddhatraya* and *Laghutraya.*

2.1.3 Selection, processing, and quality evaluation of the raw materials

All the ingredients were collected, cleaned and dried them well. It was then identified macroscopically and studied for important botanical characteristics. All ingredients were authenticated by Department of *Dravya Guna Vignana,* University of Colombo, Rajagiriya.

Table 2: Raw materials collected.

No	Ingredient	Used part
1	*Rakta candana*	Heart wood
2	*Candana*	Heart wood
3	*Daru haridra*	Stem
4	*Haridra*	Rhizome
5	*Manjishta*	Root
6	*Madhuka*	Root
7	*Lodhra*	Stem bark
8	*Ushira*	Root
9	*Kushta*	Root
10	*Masura*	Seed

2.1.4. Preparation of face pack

Lepadi Vidhi of the Ayurveda drug preparation was followed to prepare the *Mukha Lepa.*[25]
All the ingredients were ground into fine powder and sieved to get fine powder. Then all the fine powders were accurately weighed individually by using digital balance. The quantity and composition are listed in Table 3.

Table 3: Composition of the face pack.

No	Ingredient	Quantity
1	*Rakta candana*	10g
2	*Candana*	10g
3	*Daru haridra*	10g
4	*Haridra*	10g
5	*Manjishta*	10g
6	*Madhuka*	10g
7	*Lodhra*	10g
8	*Ushira*	10g
9	*Kushta*	10g
10	*Masura*	10g
11	Bee's honey	Sufficient quantity

All these ingredients were mixed thoroughly to form a uniform mixture. Then the prepared face pack was store in suitable plastic container and used for analytical studies.

2.1.5. Standardization of face pack[26]

2.1.5.1. Organoleptic evaluation[26]

The organoleptic parameters include its color, odor, taste and texture were evaluated manually.

2.1.5.2. Physicochemical evaluation[26]

P^H Value

P^H value was measured by using digital P^H meter.

Figure 1: pH meter.

Moisture content[26]

Moisture content is important for the plant drugs because insufficient drying may lead to possible enzymatic deterioration of active principles. About 2g of sample was taken and measure the moisture using moisture analyzer.

Figure 2: Moisture analyzer.

Total ash value[26]

Ash value is calculated to determine the inorganic contents which are characteristic for an herb. About 2g of sample was taken in a crucible previously ignited and weighed. Incinerated the sample by gradually increasing the heat until free from carbon and cool. Kept it in desiccators. Weighed the ash and calculate the percentage of the total ash with reference to the air dried sample using following equation.

$$\text{Total ash percentage} = \frac{\text{Weight of total ash}}{\text{Weight of crude drug}} \times 100\%$$

Acid insoluble ash value[26]

Acid insoluble ash was calculated by boiling above obtained ash with 25ml dil.Hcl for 5 min, insoluble matter was collected in crucible, washed with hot water, ignited, weighed the ash and calculate the percentage of the total ash with reference to the air dried sample using following equation.

$$\text{Acid soluble ash percentage} = \frac{\text{Weight of acid insoluble ash}}{\text{Weight of crude drug}} \times 100\%$$

Water soluble ash value[26]

Water soluble ash was calculated by boiling above obtained ash with 25ml of water for 5 min, insoluble matter collected on filter paper was washed with hot water, ignited, and weighed. Difference in weight of ash and weight of water insoluble matter gave the weight of water soluble ash. The percentage of water soluble ash was calculated with reference to the air-dried sample using following equation.

$$\text{Water soluble ash Percentage} = \frac{\text{Weight of total ash} - \text{Weight of water insoluble ash}}{\text{Weight of crude drug}} \times 100\%$$

2.1.5.3. Phytochemical evaluation[26]

Test for alkaloids[26]

200 mg of plant material was dissolved in 10ml of Methanol and filtered. To 2ml of filtrate, 1% HCl and 6 drops of Mayer's reagent was added. creamish, brownish red or orange precipitate indicated the presence of alkaloids.

Test for tannins[26]

Lead Acetate Test

To a few drops of the extract few drops of lead acetate was added. Yellow or florescent yellow precipitate indicated the presence of tannins.

Test for saponins[26]

Frothing Test

To 0.5ml of filtrate, add 5ml of water. Shake vigorously. Persistence of froth for at least 10minutes indicated the presence of saponins.

Test for terpenoids[26]

Salkowski Test

5ml of extract was mixed with 2ml of chloroform. Added 3ml of concentrated H_2SO_4 along the sides to form a layer. A reddish-brown color indicates the presence of terpenoids.

Test for phenolics[26]

Ferric Chloride Test

To a few drops of extract in 70% alcohol, added a few drops of $FeCl_3$.Green or blue color indicates the presence of water soluble phenolics.

Test for peptide bonds[26]

2ml of extract was mixed with 1ml of NaOH, shaken thoroughly, added 1% $CuSO_4$ drop by drop and shaken after each drop. Violet color indicates presence of peptide bonds.

Test for amino acids[26]

2ml of extract was added with 4 drops of 0.1% Ninhydrin solution, mixed, boiled for 1 to 2 minutes and allowed to cool. Purple color indicates presence of amino acids.

Test for carbohydrate[26]

Taken 5ml of Benedict reagent, added 8 drops of extract, boiled in a water bath for 2 minutes and allowed to cool. A light green, yellow or brick red color or precipitate indicates presence of carbohydrate.

All the tests were done 3 times for the sample.

2.1.6. Evaluation of the pharmacological properties of drugs used in face pack

Both pharmacodynamic and pharmacokinetic properties of *Rakta candana, Candana, Daru haridra, Haridra, Manjishta, Madhuka, Lodhra, Ushira, Kushta, Masura* were evaluated.

3.1. OBSERVATIONS AND RESULTS

3.1.1. Literature analysis

3.1.1.1. Number of skin complexion improving formulae mentioned in Ayurveda and TM

Table 4: Number of skin complexion improving formulae mentioned in Ayurveda and TM.

Texts	Number of formulae
Vruddhatraya and Laghutraya	40
Khanda Vaidya Grantha	67
Thalpathe Piliyam	58
Total	165
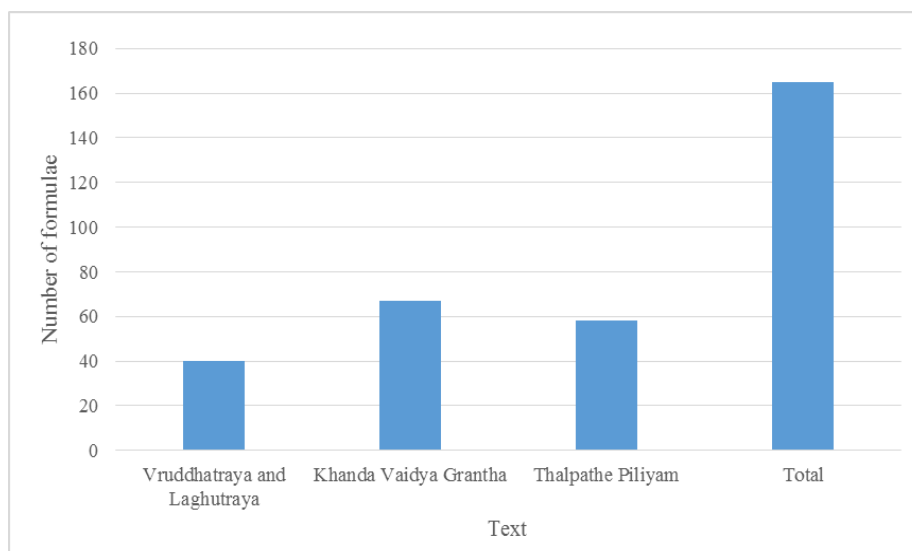
Figure 3: Number of skin complexion improving formulae mentioned in Ayurveda and TM.

3.1.1.2. Different types of drugs used in skin complexion improving formulae in Ayurveda and TM.

Table 5: Different types of drugs used in skin complexion improving formulae in Ayurveda and TM.

Type of drug	Number of drugs	
	Ayurveda	**Traditional Medicine**
Herbal	61	139
Mineral	8	18
Animal	7	15
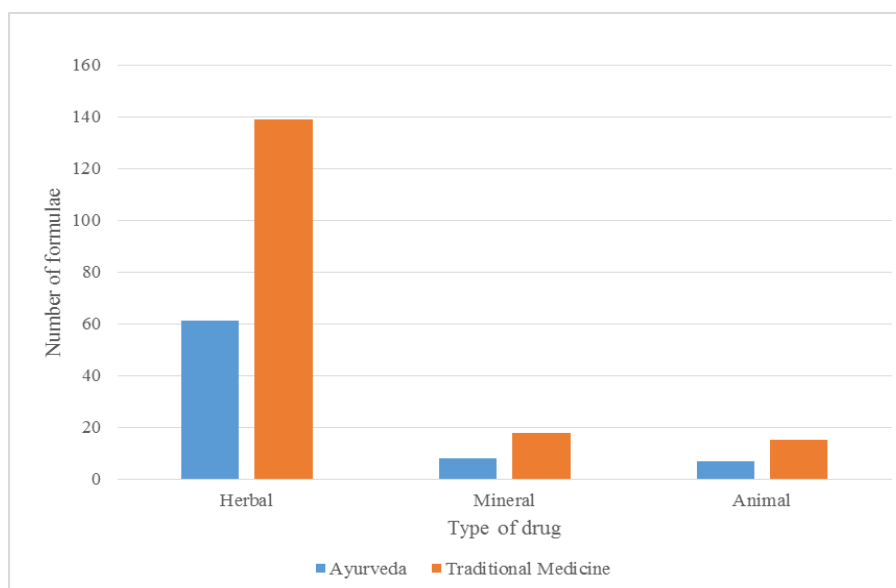
Figure 4: Different types of drugs used in skin complexion improving formulae in Ayurveda and TM.

3.1.1.3. Different parts of plants used in skin complexion improving formulae in Ayurveda and TM

Table 6: Different parts of plants used in skin complexion improving formulae in Ayurveda and TM.

Part of the plant	Number of formulae	
	Ayurveda	**Traditional Medicine**
Root	21	41
Root bark	10	27
Stem	14	10
Stem bark	5	28
Heart wood	8	12
Leave	4	38
Flower	6	5
Seed	15	59
Spines	1	0
Fruit	7	25
Latex	2	4
Exudate	6	6
Rhizome	4	19
Tuber	7	8
Seed marrow	3	0
Stamen	2	0
Nascent	3	0
Pod	0	5
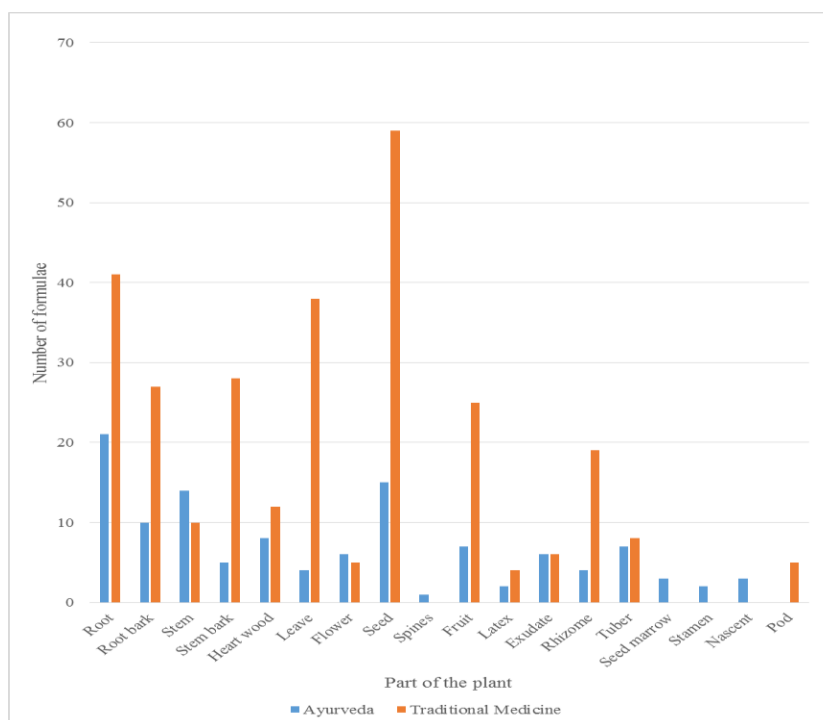
Figure 5: Different parts of plants used in skin complexion improving formulae in Ayurveda and TM.

3.1.1.4. Liquids used in skin complexion improving formulae in Ayurveda

Table 7: Liquids used in skin complexion improving formulae in Ayurveda.

Liquid	Number of formulae
Bee's honey	4
Cow's milk	3
Ghee	3
Water	26
Goat milk	1
Curd	1
Cow's urine	2
Go shakruth rasa	1
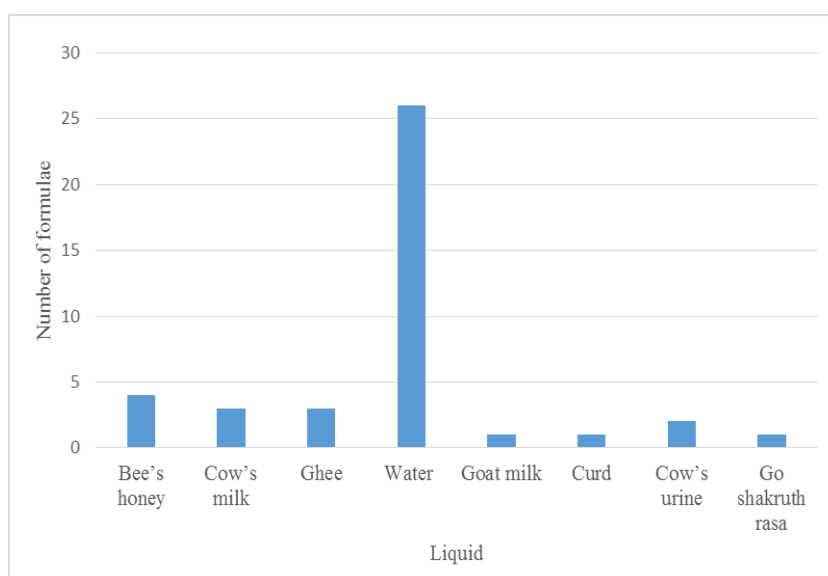
Figure 6: Liquids used in skin complexion improving formulae in Ayurveda.

3.1.1.5. Liquids used in skin complexion improving formulae in KVG

Table 8: Liquids used in skin complexion improving formulae in KVG.

Liquid	Number of formulae
Thala thel	6
Kohomba thel	1
Endaru thel	1
Aba thel	1
Elagithel	5
Pol thel	1
Vara kiri	3
Go mutra	3
Kadi diya	4
Hiressa palu yusha	1
Dehi ambul	5
Daluk palu yusha	3
Nelli yusha	1
Amu kaha yusha	1

Inguru yusha	1
Karanda mul pothu yusha	1
Parana ankenda pothu yusha	1
Thembili pol kiri	1
Mee peni	4
Mee iti	2
Elakiri	2
Moru	1
Jalaya	19
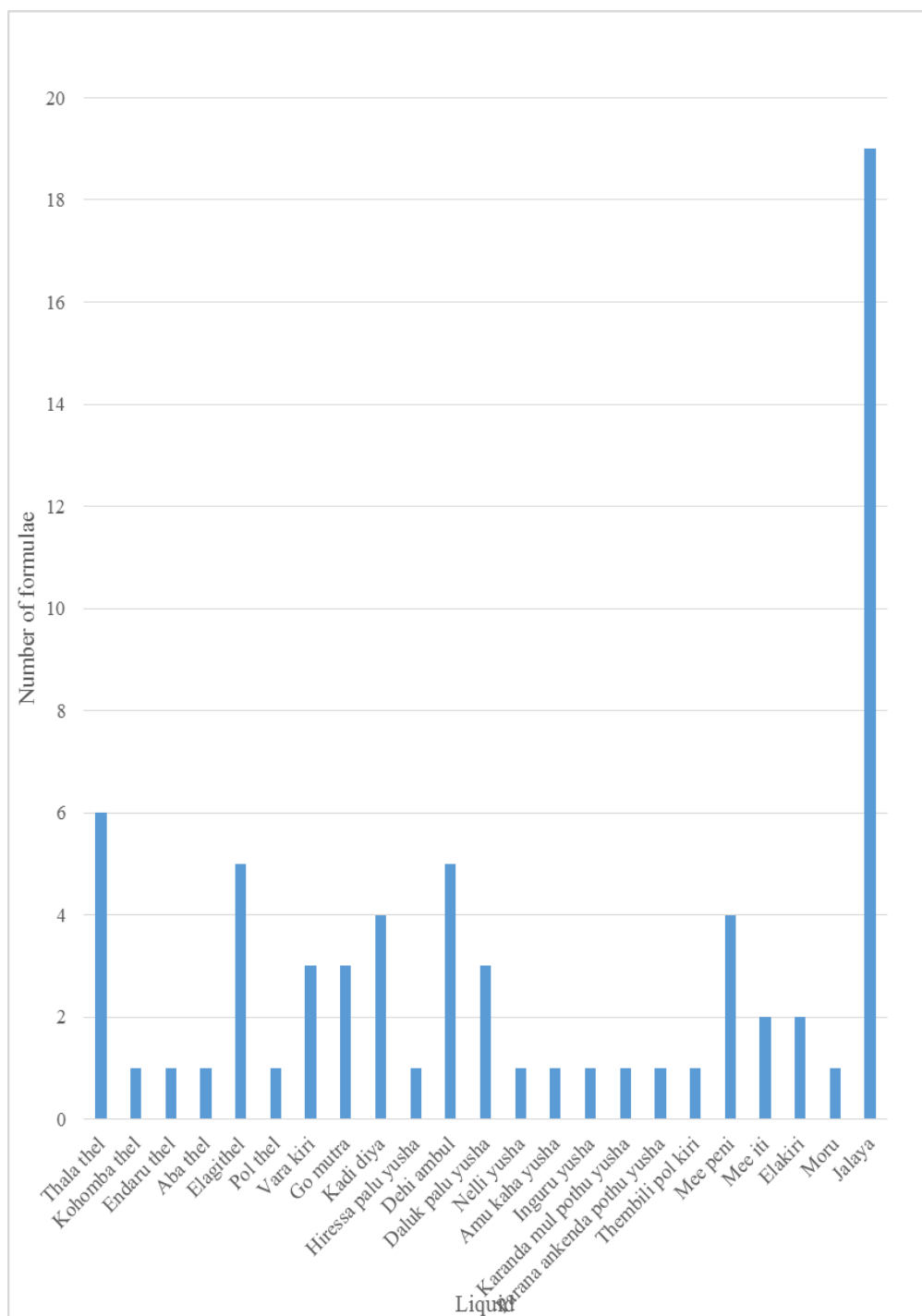
Figure 7: Liquids used in skin complexion improving formulae in KVG.

3.1.1.6. Liquids used in skin complexion improving formulae in TP

Table 9: Liquids used in skin complexion improving formulae in TP.

Liquid	Number of formulae
Thala thel	10
Vara kiri	1
Go mutra	11
Kadi diya	10
Hiressa palu yusha	4
Dehi ambul	7
Patok kola yusha	1
Inguru yusha	1
Jalaya	27
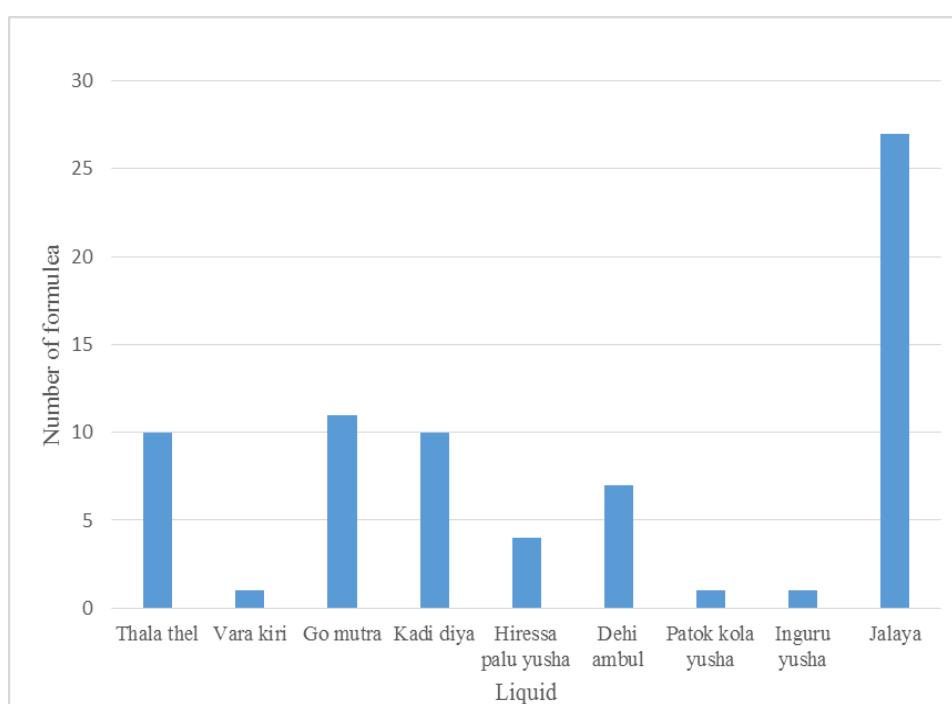
Figure 8: Liquids used in skin complexion improving formulae in TP.

3.1.1.7. Different preparatory methods of skin complexion improving formulae in Ayurveda and TM

Table 10: Different preparatory methods of skin complexion improving formulae in Ayurveda and TM.

| Method of preparation	Number of formulae	
	Ayurveda	Traditional Medicine
Taila	7	32
Ghruta	1	3
Lepa	48	75
Tel kira	-	15
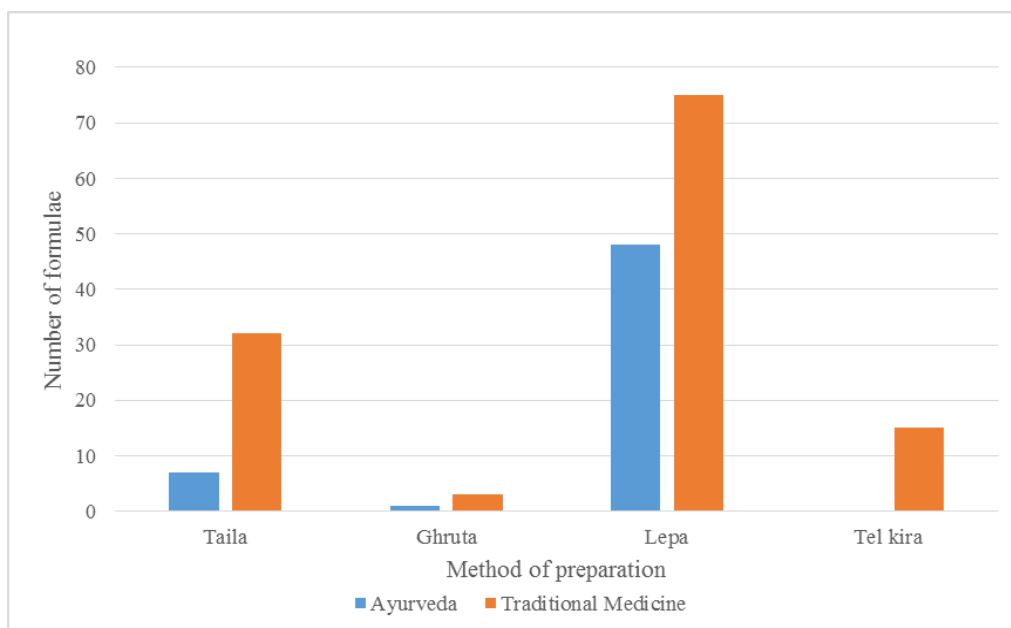
Figure 9: Different preparatory methods of skin complexion improving formulae in Ayurveda and TM.

3.1.1.8. 25 Drugs mostly mentioned in skin complexion improving formulae in *Vruddhatraya* And *Laghutraya*

Table 11: 25 Drugs mostly mentioned in skin complexion improving formulae in *Vruddhatraya* And *Laghutraya*.

Drug	Number of Formulae					Percentage
	CS	SS	ASH	BP	SaS	
Daruharidra			2	2	1	12.5%
Candana			2	2		10%
Lodra			2	1	1	10%
Madhuka		2	2			10%
Masura			1	2	1	10%
Rakta candana			1	1	1	7.5%
Ushira			3			7.5%
Haridra			1	1	1	7.5%
Manjishta			1	1	1	7.5%
Kushta			1	1	1	7.5%
Vata ankura			1	1	1	7.5%
Priyangu			1	1	1	7.5%
Kaliyaka	1	1	1			7.5%
Kalutala			2			5%
Arka kshira				1	1	5%
Nagakesara	2					5%
Upul			2			5%
Tvak			1			2.5%
Tala			1			2.5%
Mahari			1			2.5%
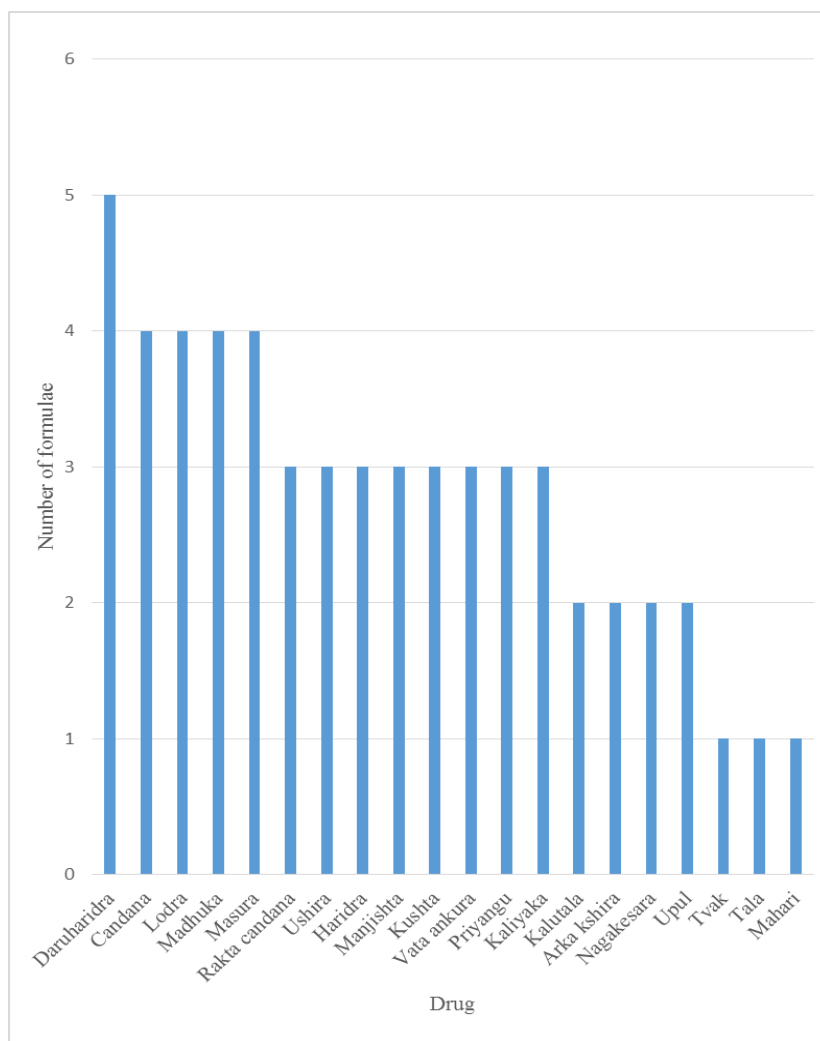
Figure 10: 25 Drugs mostly mentioned in skin complexion improving formulae in *Vruddhatraya* **And** *Laghutraya.*

3.1.2. Preparation of face pack

3.1.2. 1. Ingredients before grind

Figure 11: Rakta candana

Figure 12: Candana

Figure 13: Daru haridra

Figure 14: Haridra

Figure 15: Manjishta

Figure 16: Madhuka

Figure 17: Lodhra

Figure 18: Ushira

Figure 19: Kushta

Figure 20: Masura

Figure 21: Bee's honey.

3.1.2.2. Liquid ingredient used

3.1.2.3. Powdered and sieved ingredients

Figure 22: Rakta candana

Figure 23: Candana

Figure 24: Daru haridra

Figure 25: Haridra

Figure 26: Manjishta

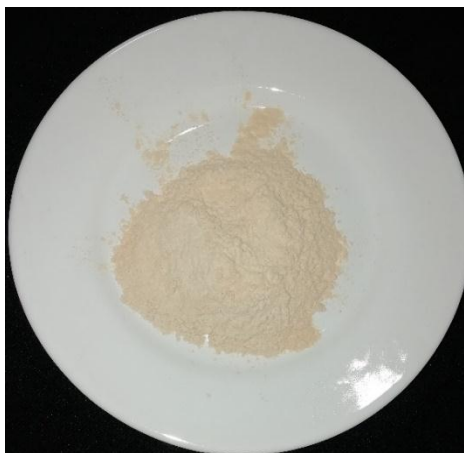**Figure 27: Madhuka**

Figure 28: Lodhra

Figure 29: Ushira

Figure 30: Kushta   **Figure 31: Masura**

3.1.2.4. Method of preparing face pack

Step 1: Mixing of all powdered ingredients together.

Figure 32: Mixing of powdered ingredients.

Step 2: Adding of bee's honey.

Figure 33: Adding of bee's honey.

Step 3: Mixing of all ingredients into a paste.

Figure 34: Mixing of all ingredients into a paste.

Step 4: Storing in a container.

Figure 35: Stored final product.

3.1.3. Standardization of face pack

3.1.3.1. Organoleptic evaluation of the face pack

Table 12: Organoleptic properties of the face pack.

Parameter	Observation
Nature / Appearance	Paste
Color	Reddish brown
Odor	Characteristic
Taste	Sweet
Texture	Slightly sticky

3.1.3.2. Physicochemical evaluation of the face pack

Table 13: Physicochemical properties of the face pack.

Parameter	Observation
pH	4.70
Moisture content	0.22%
Total ash	2.90%
Acid insoluble ash	3.19%
Water soluble ash	2.24%

Figure 36: pH value   **Figure 37: Moisture content**

3.1.3.3. Phytochemical evaluation of the face pack

Table 14: Phytochemical properties of the face pack.

Phytochemical	Result
Alkaloids	+
Tannins	+
Saponins	-
Terpenoids	+
Phenolics	+
Peptide bonds	+
Amino acids	-
Carbohydrates	+

Figure 38: Phenolics

Figure 39: Tannins

Figure 40: Saponins

Figure 41: Terpenoids

Figure 42: Alkaloids   **Figure 43: Peptide bonds**

**Figure 44: Amino acids**   **Figure 45: Carbohydrate**

3.1.4. Evaluation of pharmacological properties of the face pack

3.1.4.1. Pharmacodynamic properties of the face pack

Rasa of selected drugs of the face pack [16][17][18][19][20][21][22][23][24]

Table 15: *Rasa* of selected drugs of the face pack.

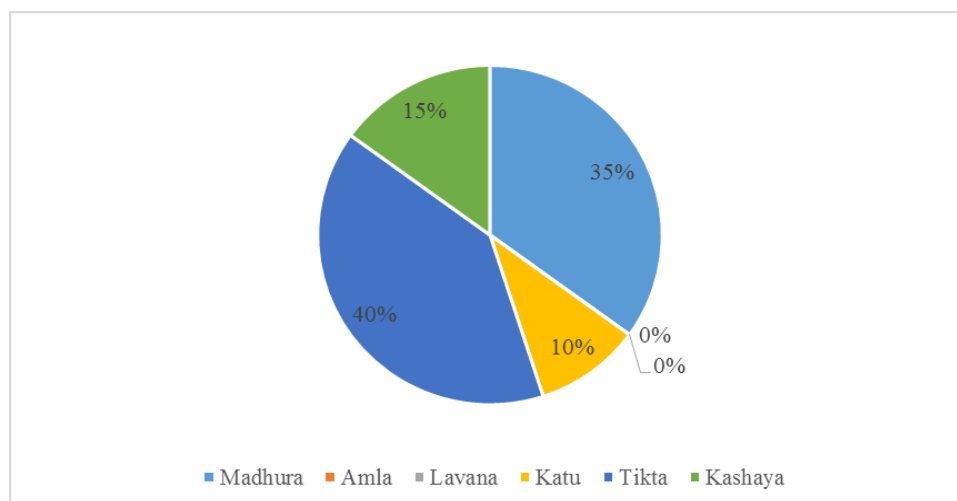| Dravya	Madhura	Amla	Lavana	Katu	Tikta	Kashaya
Rakta candana	√				√	
Candana	√				√	
Daru haridra					√	√
Haridra				√	√	
Manjishta	√				√	
Madhuka	√					
Lodra					√	√
Ushira	√				√	
Kushta	√			√	√	
Masura	√					√
Percentage	35%	0%	0%	10%	40%	15%
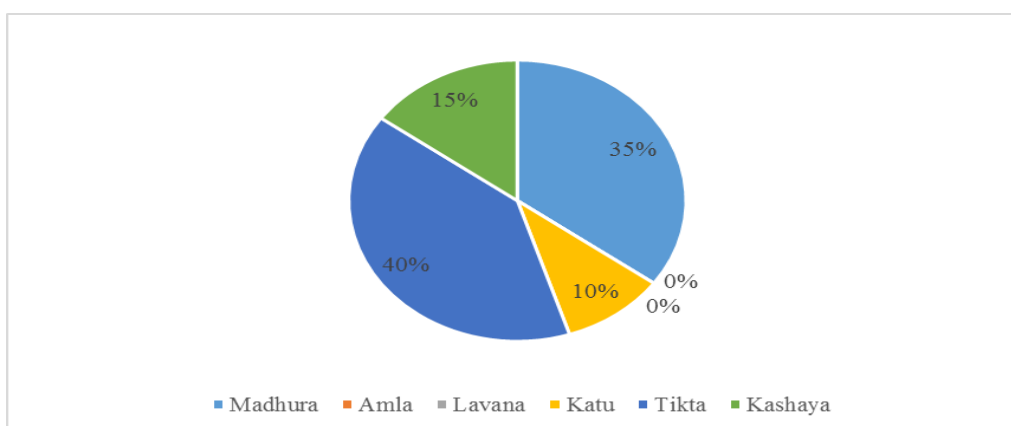
Figure 46: Percentage of *rasa* of selected drugs the face pack.

Guna of selected drugs of the face pack[16][17][18][19][20][21][22][23][24]

Table 16: *Guna* of selected drugs of the face pack.

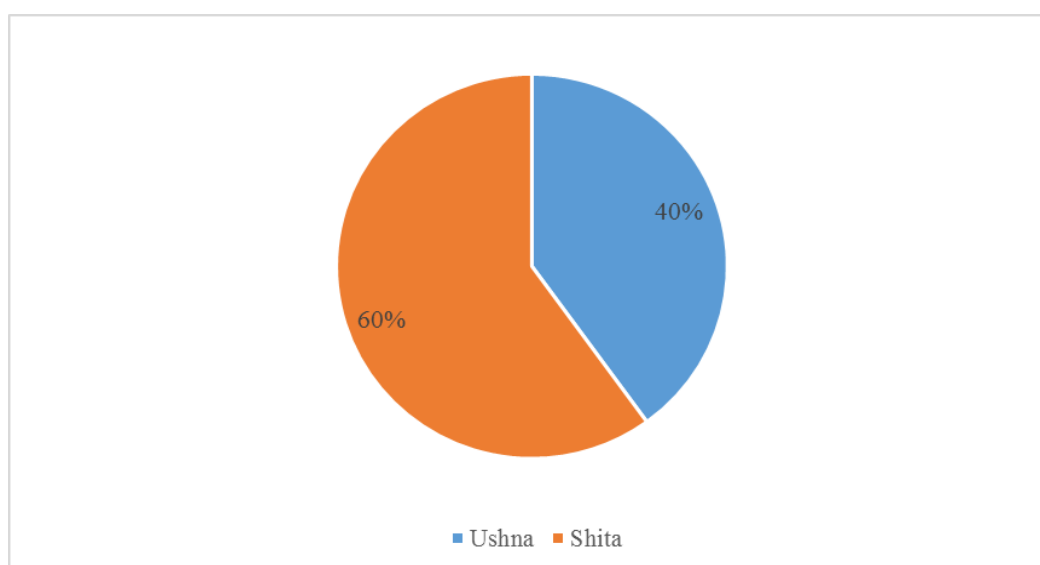| Dravya	Laghu	Guru	Ruksha	Snigdha	Tikshna
Rakta candana	√		√		
Candana	√		√		
Daru haridra	√		√		
Haridra		√	√		
Manjishta		√		√	
Madhuka	√		√		
Lodra	√		√		
Ushira	√		√		
Kushta	√		√		√
Masura		√	√		
Percentage	33.33%	14.28%	42.87%	4.76%	4.76%

Figure 47: Percentage of *Guna* of selected drugs of the face pack.

Virya of selected drugs of the face pack [16][17][18][19][20][21][22][23][24]

Table 17: *Virya* of selected drugs of the face pack.

| Dravya	Ushna	Shita
Rakta candana		√
Candana		√
Daru haridra	√	
Haridra	√	
Manjishta	√	
Madhuka		√
Lodra		√
Ushira		√
Kushta	√	
Masura		√
Percentage	40%	60%

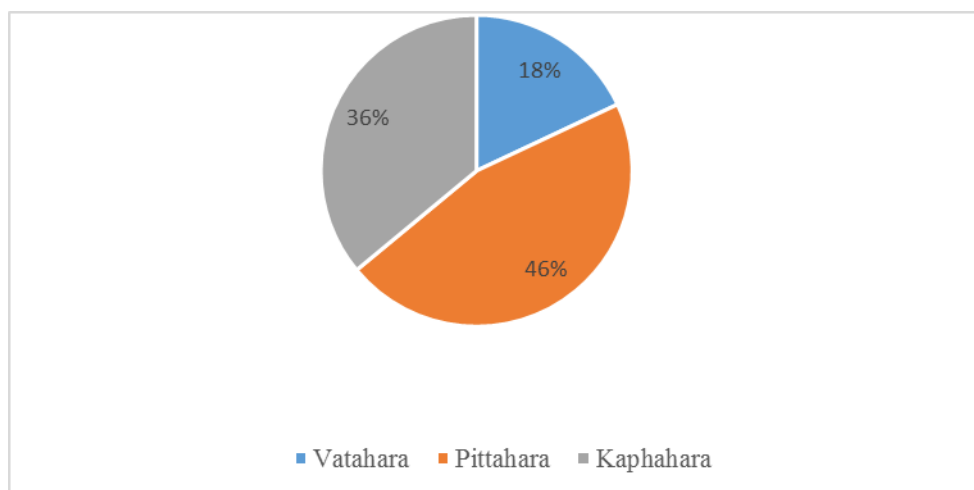**Figure 48: *Virya* of selected drugs of the face pac.**

Vipaka of selected drugs of the face pack[16][17][18][19][20][21][22][23][24]

Table 18: *Vipaka* of selected drugs of the face pack.

Dravya	Madhura	Katu
Rakta candana		√
Candana		√
Daru haridra		√
Haridra		√
Manjishta		√
Madhuka	√	
Lodra		√
Ushira		√
Kushta		√
Masura		√
Percentage	10%	90%
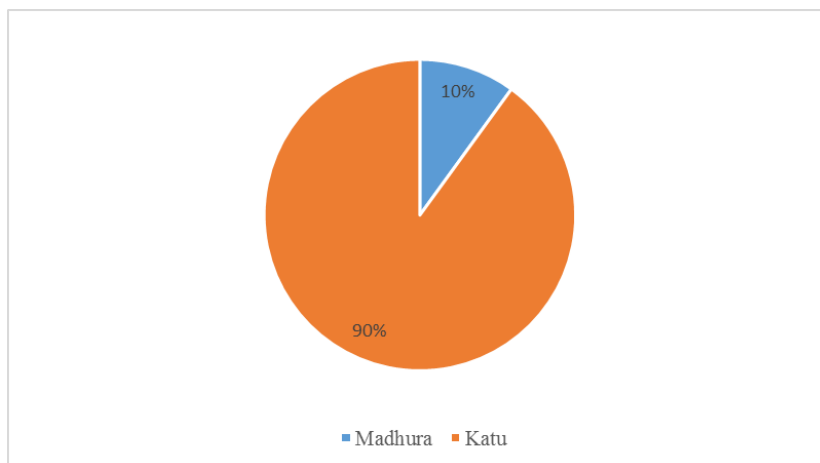
Figure 49: *Vipaka* of selected drugs of the *Mukha Lepa* (face pack).

3.1.4.2. Pharmacokinetic properties of the face pack.

Dosha Karma of selected drugs of the face pack[16][17][18][19][20][21][22][23][24]

Table 19: *Dosha Karma* of selected drugs of the face pack.

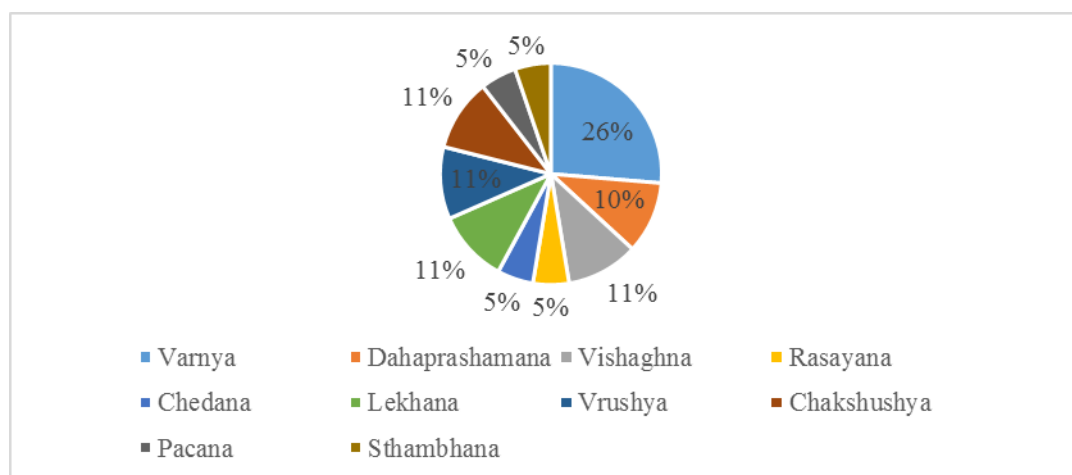| Dravya	Dosha Karma		
	Vatahara	Pittahara	Kaphahara
Rakta candana		√	√
Candana		√	√
Daru haridra		√	√
Haridra	√	√	
Manjishta		√	√
Madhuka	√	√	√
Lodra		√	√
Ushira		√	√
Kushta	√	√	
Masura	√	√	√
Percentage	18%	46%	36%

Figure 50: Percentage of *Dosha Karma* of selected drugs of the face pack.

Sansthanika Karma of selected drugs of the face pack[16][17][18][19][20][21][22][23][24]

Table 20: *Sansthanika Karma* of selected drugs of the face pack.

Dravya	Sansthanika Karma									
	Varnya	Dahaprashamana	Vishaghna	Rasayana	Chedana	Lekhana	Vrushya	Chakshushya	Pacana	Sthambhana
Rakta candana	√	√								
Candana	√	√								
Daru haridra					√					
Haridra	√		√				√			
Manjishta	√		√							
Madhuka				√			√	√		
Lodra								√		
Ushira									√	√
Kushta						√	√			
Masura	√									
Percentage(%)	26	10	11	5	5	11	11	11	5	5

Figure 51: Percentage of *Sansthanika Karma* of selected drugs of the face pack.

4.1. DISCUSSION

Among *Vruhatraya* and *Laghuthraya* except *Madhava Nidana*, all other texts have mentioned about skin complexion enhancing formulae. Among Traditional Medicine *Khanda Vaidya Grantha* and *Thalpathe Piliyam* are few texts which have mentioned about those.

Herbal, mineral and animal drugs have used in both Ayurveda and Traditional Medicine in skin complexion improving. *Taila, Ghrta, Lepa* and *Thel Kira* preparatory methods have used in Ayurveda and Traditional Medicine for beautification. Ayurveda and Traditional Medicine have used many types of liquids in beautification such as water, bee's honey, *Ghrta* etc.

Among herbal drugs used in Ayurveda *Rakta candana, Candana, Daru haridra, Haridra, Manjishta, Madhuka, Lodhra, Ushira, Kushta and Masura* are the most used ten drugs. Hence these drugs have selected for the novel cosmeceutical preparation.

Among different drug preparatory methods in Ayurveda *Lepa* method is the most used one. Because of that the *Lepa* method has selected.

Among different liquids used in Ayurveda water is the most used liquid. But when water used the preparation could not be preserved for long time. Hence bee's honey, the second most used liquid has selected.

In Ayurveda, process of formation of skin in fetus is attributed to *Paka* of *Raktha Dhathu*. *Agni Maha Bhuta* is said to be at the root of *Varnya Utpatti.*[27] There are 7 layers of skin[28] and the first layer which is called as *Avabhasini* is the responsible layer for the complexion of the body. *Brajaka Agni/ Brajaka Pitta* have located in the first layer.[29] This helps to make the luster and complexion of body.

When *Pitta Dosha* gets vitiated, the action of *Brajaka Pitta* is diminished. Then luster and complexion is decreased, and discolorations are occurred. The *Ama* of skin is increased and *Kapha Dosha* gets vitiated. Hence *Kledatwa* of skin and skin tone get diminished.

According to the modern science skin-lightening ingredients can also be classified by their source, such as classes to which they belong. The important classes are;

i.   Chemical tyrosinase inhibitors (hydroquinone and similar type of compounds)

ii. Botanicals (essentially from plants and algae)

iii. Antioxidants

iv. Vitamins – A, B, C, E

v. Peptides

vi. Alpha and beta hydroxyl acids and derivatives

Among them botanical extracts mostly contain a combination of two or more classes of compounds that works synergistically to achieve skin lightening. Botanicals connote nature and are hence more acceptable to people.[30]

According to Ayurveda, the herbs which alleviate *Pitta*, *Raktha* and also *Kapha* in general either acting through their *Rasa, Vipāka* or *Prabhāva* considered as *Varnya*.

This oil has *Madhura, Tiktha, Kashāya Rasa*, *Guru, Snigdha Guna, Shītha Vīrya* and *Madhura Vipāka* which is pacify the *Pitta Dosha* and has *Tiktha* and *Kashāya Rasa* which are pacify *Kapha Dosha* and retain the action of *Varnya.*

This face pack has

Madhura(35%), *Tikta*(40%), *Kashaya*(15%) *Rasa*

Ruksha(42.87%), *Guru*(14.28%) *Guna*

Sita(60%) *Virya* and

Katu(90%) *Vipaka* which pacify *Pitta Dosha*.

Hence this face pack would be beneficial for improving skin complexion. And this face pack has phytochemicals like alkaloids, tannin, terpenoids etc. Because of this the face pack has anti-bacterial, anti-fungal and antioxidant properties which beneficial in skin complexion as well as in providing protection from pathogenic bacteria and fungi.

4.2. CONCLUSION

This research study is more useful to all who concern about their beauty. Ayurveda authentic texts revealed much information about beauty and skin complexion. Traditional medicine mentioned large number of formulae for improvement of skin complexion. Face pack using *Rakta candana, Candana, Daru haridra, Haridra, Manjishta, Madhuka, Lodhra, Ushira, Kushta and Masura* is developed for the first time. The pharmacodynamic properties proved its capability as a complexion improving cosmetic product. However further studies are essential to develop this as a marketed product.

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