

A PHARMACEUTICO-ANALYTICAL STANDARDIZATION OF KANAK TAILA AND ITS EMULSION**Dr. Arun Kumar Nema^{*1}, Dr. R.P. Singh², Dr. Prashant D. Math³, Dr. Komal Motgare⁴ and Dr. Bhanu Pratap Singh⁵**¹P.G Scholar (Final Year) Department of Rasshastra Avm Bhaishajya Kalpna, Rani Dullaiya Smriti Ayurved P.G College and Hospital Bhopal (M.P).²Principal, Rani Dullaiya Smriti Ayurved P.G College and Hospital Bhopal (M.P).³Professor, Department of Rasshastra avm bhaishajya kalpna, Rani Dullaiya Smriti Ayurved P.G College and Hospital Bhopal (M.P).⁴Associate Professor, Department of Rasshastra avm Bhaishajya Kalpna, Rani Dullaiya Smriti Ayurved P.G COLLEGE and Hospital Bhopal (M.P).⁵Assistant Professor, Department of Rasshastra Avm Bhaishajya Kalpna, Rani Dullaiya Smriti Ayurved P.G College and Hospital Bhopal (M.P).***Corresponding Author: Dr. Arun Kumar Nema**

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ABSTRACT

In today's era our youth suffering from many problems specially related to face like Abhiru, Neelika, Vyanga etc. because of hormonal imbalance, life style, junk foods etc. So a good medicine which is helpful for good complexion is a need of hour. The work chosen is Kanak tail and its emulsion form. Both delivery forms will be compared to find out which one form is more stable and of good quality. The reason behind the conversion of the taila form to emulsion, taila is having more unctuousness, so that no one wants to touch while applying. Its oiliness will cause discomfort. Apart from this reason, the emulsion form more easily absorbable than oil. There taila which will enhance the absorption property of emulsion. So the result will be effective to compare taila. Upon observing this side of view it is the need of hour to change our formulation. The present study aimed here is to standardize the Kanaka Taila Mukhakantakar pharmaceutically by preparing SMP (Standard Manufacturing Procedure) and analytically by analyzing on various available parameters.

Certain standards or parameters are necessary for raw drugs, procedure and end products to provide quality assurance. For systematic study of standardization of Ayurvedic drugs and formulation, standardization in this context can be divided in to three steps.

1. **Standardization of raw drugs**- this includes the Herbal, mineral and animal origin drugs.
2. **Standardization of process of procedures followed to prepare formulation** – this includes the purification etc procedure to prepare a particular formulation.

Standardization of finished products- this includes a quality of finished products.

Drug delivery form of a medicine has highly impact on treatment of a disease. Hence in the present study Kanak Tail Mukhakantakar which has oily, greasy texture has been planned to convert in to a smoother and non greasy form of emulsion.

An emulsion is a biphasic liquid systems which containing two immiscible liquids, one of which is dispersed as minute globule in to the other liquid. The liquid which is converted into minute globules is called the dispersed phase and the liquid in which the globule are dispersed is called the continuous phase. Generally, two immiscible liquids cannot be dispersed for a long time period. So, an emulsifying agent is added to the system. A film is formed around the globules by the emulsifying agent in order to scatter them indefinitely in the continuous phase, so that a stable emulsion is formed.

KEYWORD: Kanak tail, Emulsification, standardization.**REVIEW OF LITERATURE**

The review of literature includes through screening of class Ayurvedic literatures, journals, text to collect the

data for a present study. It is mainly divided in to 3 heading.

- Drug review
- Pharmaceutical review

- Analytical review

The formulation of Kanak Taila Mukhakantika as taken from the Bhaishya Ratnawali.

DRUG REVIEW

Table No.1: Drug Review.

S. No.	Drug Name	Botanical Name
1	Yashtimadhu	<i>Glycyrrhiza Glabra</i>
2	Priyangu	<i>Callicarpa Macrophylla</i>
3	Manjistha	<i>Rubia Cordifolia</i>
4	RaktaChandan	<i>Pterocorpus Santalinus</i>
5	Neel Kamal	<i>Nymphaea Nouchali/Stellata</i>
6	Nagkesar	<i>Mesua Ferrea</i>
7	TilaTaila	<i>Sesamum Indicum</i>

Table No. 2: Murchhana Drug Review.

S. No.	Drug name	Botanical Name
	Kalka	
1	Manjistha	<i>Rubia cordifolia</i>
2	Haridra	<i>Curcuma longa</i>
3	Lodhra	<i>Symplocos racemosa</i>
4	Musta	<i>Cyprus rotandus</i>
5	Nalika	<i>Cinnamomum tamala</i>
6	Haritaki	<i>Terminalia chebula</i>
7	Bhibhataki	<i>Terminalia bellerica</i>
8	Amalaki	<i>Embelica officanlis</i>
9	Vatankur	<i>Ficus bengalensis</i>
10	Hribera	<i>Coelus vettivoroides</i>

PHARMACEUTICAL REVIEW ON EMULSION

An emulsion is a two-phase system prepared by combining two immiscible liquids, in which small globules of one liquid are dispersed uniformly throughout the other liquid. The liquid dispersed into small droplets is called the dispersed, internal, or discontinuous phase. The other liquid is the dispersion medium, external phase, or continuous phase. Where oil is the dispersed phase and an aqueous solution is the continuous phase, the system is designated as an oil-in-water (O/W) emulsion. Conversely, where water or an aqueous solution is the dispersed phase and oil or oleaginous material is the continuous phase, the system is designated as a water-in-oil (W/O) emulsion. Emulsions may be employed orally, topically, or parenterally, depending on the formulation ingredients and the intended application. Many pharmaceutical emulsions may not be classified as such, because they are described by another pharmaceutical category more appropriately. For instance, certain lotions, liniments, creams, ointments, and commercial vitamin drops may be emulsions but may be preferentially referred to in these terms.^[55]

Types of Emulsion^[56]

The emulsion are of two type:-

- 1) Oil in water type (O/W)
- 2) Water in oil type (W/O)

In Oil-in-water emulsion, the oil is in dispersed phase whereas water is in the continuous phase. The O/W type emulsion are preferred for internal use. In these emulsions, Gum acacia, Tragacanth, Methyl cellulose, Saponins, Synthetic substance and soaps formed from Monovalent bases like sodium, potassium and NH_4 are used as an emulsifying agents.

In water-in-oil type emulsion, the water is in the dispersed phase whereas oil is in the continuous phase. The wool fat, resins, beeswax and soaps from divalent bases like Ca^{++} , Mg^{++} , and Zn^{++} are used as an emulsifying agents. The w/o type emulsions are mainly used externally as lotions or creams.

FORMULATION OF EMULSION

(A) Emulsifying Agents

The emulsifying agents reduce the interfacial tension between two phases i.e, oily and aqueous phase and thus make them miscible with each other and form a stable emulsion. Emulsifying agents are also known as emulgents or emulsifiers.

There are large number of emulsifying agents which are available to prepare a stable emulsion. But it is very difficult to select a proper emulsifying agent for the development of a stable emulsion. No single emulsifying agent possesses all the properties required for the preparation of stable emulsion. Therefore, sometimes it become necessary to use two or more than two emulsifying agents instead of one, to prepare a stable emulsion.

Griffin devised a useful method for calculating balanced mixture of emulsifying agents to provide a particular type of emulsion. It is called the Hydrophile Lipophile balance or HLB Method. Every emulsifying agent is given a number on HLB scale, Which is divided into 18 units. Emulgents with higher numbers (8-18) indicates hydrophilic properties and produce o/w type emulsions. Emulgents with lower numbers (3-6) represents lipophilic properties and produce w/o tpe emulsions. The following table indicates the HLB values and applications of emulsifying agents:-

Table no: 11: H.L.B Values of Emulsifying Agents Along with their Applications.

S.NO.	Name of the emulsifying agent	HLB value	Application
1	Acacia	8	Emulsifying agent o/w
2	Glyceryl monostearate	3.8	Emulsifying agent w/o
3	Sorbitol monostearate	4.7	Emulsifying agent w/o
4	Polysorbate 20	16.7	Solubilising agent
5	Polysorbate 60	14.9	Detergent
6	Polysorbate 80	15.0	Solubilising agent
7	Sodium lauryl sulphate	40.0	
8	Sodium oleate	18.0	Solubilising agent
9	Tragacanth	13.2	Emulsifying agent o/w
10	Triethanolamine oleate	12.0	Emulsifying agent o/w

An ideal emulsifying agent should possess the following properties:-

- 1) It should be capable of reducing the interfacial tension between the two immiscible liquids.
- 2) It should be compatible with other ingredients of the preparation.
- 3) It should be non-toxic.
- 4) It should be capable to produce and maintain the required consistency of the emulsion.
- 5) It should be chemically stable

It should be capable of keeping the globules of dispersion liquid distributed indefinitely throughout the dispersion medium.

EMULSIFYING AGENTS^[58]

1) Natural

a) **Vegetable source** - Gum acacia, Tragacanth, Agar, Pectin, Starch, Irish moss(chondrus)

b) **Animal source** - Wool Fat, Egg Yolk, Gelatin

2) **Semi-Synthetic Polysaccharides:-** Methyl Cellulose, Sodium carboxy, Methyl cellulose

3) **Synthetic :-** Anionic, Cationic, Non-ionic

4) **Inorganic :-** Milk or Magnesia, Magnesium oxide, Magnesium trisilicate, Magnesium aluminium silicate, Bentonite

5) **Alcohols :-** Carbowax, Cholesterols, Lecithins

PREPARATION OF EMULSION^[64]

The Following methods are commonly used for the preparation of emulsions on a small scale :-

- 1) Dry gum method
- 2) Wet gum method

1) **DRY GUM METHOD:-** a) Measure the required quantity of oil in a dry measure and transfer it into a dry mortar.\\

b) Add the calculated quantity of gum acacia into it and triturate rapidly so as to form a uniform mixture.

c) Add required quantity of water triturate vigorously till a clicking sound is produced and the product becomes white or nearly white due to the total internal reflection of light. The emulsion produced at this stage is known as primary emulsion.

d) Add more of water to produce required volume.

2) **WET GUM METHOD:-** In this method, the proportion of oil:water:gum for preparing the primary emulsion is the same as

a) Calculate the quantity of oil, water and gum required for preparing the primary emulsion.

b) Powder the gum acacia in a mortar. Add water and triturate it with gum so as to form a mucilage.

c) Add the required quantity of oil in small portions with rapid trituration until a clicking sound is produced and the product becomes white or nearly white. At this stage the emulsion is known as primary emulsion.

d) Add more of water in small portion to the primary emulsion with trituration to produce the required volume. Stir thoroughly so as to form a uniform emulsion.

Transfer the emulsion to a bottle, cork, label and dispense.

ANALYTICAL REVIEW

Analytical chemistry deals with determination of the composition of the materials/Drugs in terms of elements or compounds present in the materials. Two types are:-

1. **Qualitative** - Identifying the components in the sample/ material.

2. **Quantitative** - Determining the quantity of each component in the sample.

STANDARDISATION

Introduction

Tests or analysis employed in Sneha Kalpana-

Acid Value^[1]

The acid value is the number of mg of potassium hydroxide required to neutralize the free acid in 1gm of the substance, when determined by the following method:

Weight accurately about 10gm of the substance (1 to 5) in the case of a resin into a 250 ml flask and add 50 ml of a mixture of equal volumes of alcohol and solvent ether, which has been neutralized after the addition of 1 ml of solution of phenolphthalein. Heat gently on a water-bath, if necessary until the substance has completely melted, titrate with 0.1 N potassium hydroxide, shaking constantly until a pink colour which persists for fifteen

seconds is obtained. Note the number of ml required. Calculate the acid value from the following formula:-

$$\text{Acid Value} = \frac{a \times 0.00561 \times 1000}{W}$$

Where 'a' is the number of ml. of 0.1 N potassium hydroxide required and 'w' is the weight in g of the substance taken.

Thin Layer Chromatography (TLC)^[8]

Apparatus required: TLC plate coater / Precoated Plates, Development Chambers, Glass Capillaries, Conical flasks, Sprayer, UV Chamber, Hot air oven.

Thin layer Chromatography is a technique in which a solute undergoes distribution between two phases, stationary phase acting through adsorption and a mobile phase in the form of a liquid. Identification can be effected by observation of spots of identical RF value and about magnitude obtained, respectively, with an unknown and a reference sample chromatographed on the same plate. A visual comparison of the size and a reference sample chromatographed on the same plate. A visual comparison of the size and intensity of the spots usually serves for semi-quantitative estimation.

Resolution Factor (Rf value) = $\frac{\text{Distance traveled by the spot}}{\text{Solvent front}}$

Preparation of Kanak Taila Mukhakantakar

Name of the Practical : Kanak Taila, Mukhakantakar prepared by Murchita Tila Taila

Reference : Bhaishajya Ratnavali 60/113,114

Apparatus required : Weighing machine, wide mouthed vessel, Gas stove, clean cloth, ladle, Kalka Nishpeedana Yantra.

Ingredients	Quantity
Murchita Tila Taila	- 1 liter
Yashtimadhu Kwatha	- 4 liters.

Organo-leptic Characters for Kanak Taila.

Organo-leptic characters	Batch 1	Batch 2	Batch 3
Odour	Sweetish nutty odour	Sweetish nutty odour	Sweetish nutty odour
Colour	Red	Red	Red
Taste	Sweetish	Sweetish	Sweetish
Texture	Oily	Oily	Oily

Table No. 29: Organo-Leptic Characters for Kanak Taila Emulsion

Organo-leptic characters	
Odour	Sweetish
Colour	Reddish
Taste	Sweetish
Texture	Soft and smooth

CONCLUSION

The present formulation undertaken for the study has its reference in Bhaishajya ratnavali and a new drug

Kalka dravyas - a) Priyangu	- 50g
b) Manjistha	- 50g
c) Rakta chandan	- 50g
d) Neel Kamal	- 50g
e) Nagkesar	- 50g

Procedure

In Kalka dravyas adding sufficient quantity of water. The Murchita Tila Taila was taken in the wide mouthed vessel and heated over Mandagni. Yashtimadhu Kwatha was added along with Kalka Dravya, little by little and mixed well. The process of sneha paka was carried out over Mandagni to get Sneha Siddhi Lakshanas. The Taila was filtered after Taila paka Siddha Lakshanas were seen. The Kalka was put into Nishpeedana yantra in the warm state itself and the Taila was collected. The colour of Taila was brownish.

Precautions

- Proper heat was well maintained throughout the procedure.
- The care was taken to observe Sneha paka Siddhi Lakshanas at the right time.

OBSERVATIONS

- Pleasant odour and taste was observed in the final product.
- The colour of the Taila was reddish brown.
- **Analytical parameters of the Kanak Taila**

SAMPLES	
Specific gravity	0.916
Refractive index	1.716
Viscosity	0.9383
Saponification value	174.2
Acid value	4.301
Iodine value	100.87
Peroxide value	5.0

delivery system was tried and modified for conversion of Kanak taila into Kanak taila Emulsion successfully.

The SMP (Standard Manufacturing Procedure) prepared for the preparation of Kanak Taila and its Emulsion helps in Process standardization. These parameters like Specific gravity, Refractive index and Acid value etc. can be considered for the SMP (Standard Manufacturing Procedure) of formulation Kanak Taila.

This standardized Kanak Taila was used for formulating kanak taila emulsion. Since the oil was already

standardized only stability and shelf life for the kanak emulsion was tested and found to be stable. The standardizing parameters which tested the stability of this new delivery system for emulsion in reference texts were Creaming, Sedimentation, Flocculation, Coalescence By analysing the Kanak Taila emulsion we came to know that, it shows negative result for Creaming, Sedimentation, Flocculation and Coalescence. It indicates that all 3 the batches under study were well formed, stable and had a prolonged shelf life and were fit for use.

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