



REVIEW ARTICLE

CRITICAL REVIEW ON RATIO OF INGREDIENTS IN MALAHARA KALPANA (AYURVEDIC OINTMENTS)

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Abstract:

Pharmaceutical processing of malahara (ayurvedic ointments) requires basically three ingredients, an oil base, a binding material and ingredients in powder form. Usually tila taila (sesame oil) is used as oily base. As a binding material, madhuchistha, ghrita, gandhapiroja, rala and shatadhautha ghrita are used. In modern pharmaceutical industries vaseline, paraffin, animal fats are used for preparation for ointments. As the ingredient herbal and mineral drugs in powder form are used in malahara formulation. However there is no fixed ratio for the base and ingredients mentioned in the preparation of malahara. An attempt has been made in this work, to review the ratio of ingredients and the base used in malahara. A detailed search was carried out to collect information from both print and electronic media. As a result of the study it is found that ratio of sikthataila, madhuchista, taila and churna of drugs varies from one malahara to the other. If siktha taila is used as a base then the ratio of siktha taila and drug varies from 2.4:1 to 48:1. If madhuchista is used as a base in malahara the ratio of madhuchista and drug varies from 2:1 to 4:1. If taila is used in malahara the ratio of taila and drug varies from 1:1/2 to 10:1.

Key words: ayurveda, malahara, taila, madhuchista

Introduction:

Bhaishajya kalpana (ayurvedic pharmaceuticals) is a science which deals in detail about the preparation of different medicinal formulations. Kalpana is the process or the method employed in the preparation of pharmaceutical products. There are many kalpana mentioned like swarasa, kalka, kwatha, hima, phanta, sneha, masi, lavana, malahara and many other. Malahara is a unique kalpana which is one among bahirparimarjana chikitsa (external applications). There are no references about this dosage form available in ancient literatures of ayurveda. Basically being originated from unani system of medicine, it has found a place in books of ayurveda from 15th century AD. Later it gained more importance and was included in the pharmaceutical dosage forms¹. Siktha taila, a

compound of oil and bee wax is used as a base in most of the malahara. The changes in the amount of taila and siktha (Bee wax) according to the season were also emphasised².

Malahara has a property like snehana (oelation), cleansing, ropana (healing), lekhana (scaraping), and varnya (beautifying), depending on the drugs used in the preparation. Selection of the base and the ingredient in a malahara probably depends on the disease condition in which has to be used³. If ghrita (ghee), madhuchistha (beewax), niryasa (exudates of plant) are used in the preparation, it will be having sheetha guna (cold property) and can be used in pitha vikaras (diseases of pitha). If vasalline, taila (oil) etc are used as a base it will be having ushna guna (hot potency) which can be used in kapha vyadhi⁴ (disease of kapha).

General method of preparation:

There are two method of preparation of malahara trituration and fusion⁵

- 1) In trituration method the drugs are taken in a khalva (mortar and pestle) and triturated for a specific duration till they are mixed uniformly. In contemporary science ointment slate and spatula are used to make the uniform mixture.
- 2) In fusion method, ointment base is melted on mild fire or on a hot water bath and other ingredient are mixed one by one properly and allowed to cool till it get solidified. The mixing of the substance should be done in the ascending order of the melting point. i.e. the substance with higher melting point should be melted first followed by the substance with lower melting point one after the other.

The amount of base may vary according to the season or need of the physician. For instance in the context of siktha taila the ratio of maduchishta (base) and tila taila (sesame oil) varies according to the season. In the sheetha kala (winter) the ratio will be 1:6 and in ushna kala (summer) it will be 1:5.

Base in the malahara is selected based on the preservative action, Soothing action and emollient action. Generally the ayurveda base used in malahara is madhuchishta, taila, ghrita, shatadhautha ghrita (ghee washed 100 times in water), gandhaphiroja (Extract of *Pinus longifolia*) and sarjarasa (Niryasa of *Shorea robusta*). The ingredients used should be atyanta shuskma (fine powder) and of good potency⁶.

General consideration⁷

Following points are note worthy during pharmaceutical processing of malahara.

1. If the main drug is made up of niryasa, rala or any satva (extract) it should be mixed with water, taila or glycerin and should make soft before adding to ointment base.

2. If the main constituent is in the form of solid or coarse powder it should be made sukshma churna and then added to the base. The churna in the malahara should be such that it should not produce grittiness after preparation.
3. If the main drug is deliquescent like saindhava lavana (NaCl) or kshara (alkaline) then water should be added before adding the base to make it liquefied and then added to the base.
4. If the main drug contains alkaloid like aconitine (Ativisha: *Aconitum hetreophyll*, or Vatsanabha: *Aconitum ferox*), dhaturine (Dattura: *Datura metel*), then first it is mixed with oleic acid and mixed well.
5. If malahara contains any liquid extract like belladonna, liquid should be evaporated till it become thick and then it should be added to the base.
6. If the main drug in the malahara contains volatile substance then it should be added at the end of the preparation.
7. If the melting point of the base used in malahara is more than the other ingredients then base should be melted first later subsequent drugs should be added which have low melting point.

Test of perfectness:

There is no specific test mentioned to decide proper preparation. However, a test has been mentioned in the context of kala Malahara⁸. Two to three drops of medicine during preparation are put in water and the changes are observed. If the medicine spreads /sinks the paka are improper. If it floats then it is considered as good. Whether this test can be adopted for other malahara is a subject of research.

Observation and Results:

A detailed literature survey was made in present study including electronic and print media. It was found that malahara was first

mentioned in 15th century. By 20th century recent scholars have added detailed formulation belonging to this group. The focus of the study was to identify the ratio of oil base, binding base and the ingredient used in malahara and to analyze the rationality behind

the combination. Malahara from various books have been collected and were analyzed it was found that there is no standard ratio of the three essential components among these malahara . The ratio of the base and ingredients is shown in Table1.

Ingredient	Ratio of base and ingredient
Gandhakadya malahara	4.5:1
Rasapushpa malahara	24:1
Rasapushpadya malahara	24:1
Dadruvidrama malahara	4.8:1
Kala malahara	1:1/2
Biroja ka lal malahara	40:1
Biroja ka hara malahara	6:1
Shwetha malahara	80:1
Gulabi malahara	3.14:1
Jeevanthyadi malahara	2.6:1
Rala malahara	80:1
Varanamrutha shwetha malahara	1.3:1
Gulabi malahara	10:1
Upadamsharepu malahara	2.66:1
Arshahara malahara	2:1
Darunanashaka malahara	1.8:1
Manasheeladi malahara	2:1
Paradadi malahara	3.87:1
Nimbadi malahara	1:3.3
Paradadi malahara	4.7:1
Sarjarasa malahara	10:1
Sindhuradi malahara	20:1
Tankanamrutha malahara	2.4:1
Gairikadhya malahara	2.8:1
Mudharashringadhya malahara	4:1
Prathama sindhooradi malahara	3:1
Dwithiya sindhooradi malahara	7:1
Hinguladhya malahara	12:1
Hingulamrutha malahara	8:1
Navajeevana malahara	5.6:1
Tutthamrutha malahara	48:1
Talakadhya malahara	4:1
Yashadamrutha malahara	3:1

Table 1 : Ratio of Base and ingredient in Malahara

Details of formulation complied in this study are listed below.

- 1) Gandhakadya malahara⁹: siktha-1tola (12g) , taila-5/6tola (12g) are used as a base, and gandhaka

(sulphur) - 1/2tola (6g) , sindhoora (lead sulphide) -1/2tola, tankana (borax) -2masa (2g) and karpura (camphor) -2masa (2g) are used as a ingredient.

- 2) Rasapushpa malahara¹⁰: shatadhautha ghrita-1tola (12g) is used as a base, and rasapushpa (Hg₂Cl₂, subchloride of mercury) -4 rathi (500mg) used as a ingredient.
- 3) Raspushpadhya malahara¹¹: siktha - 2g, taila-10-12 g are used as a base, and rasapushpa-4 rathi are used as a ingredient.
- 4) Dadruvidravana malahara¹²: siktha - 12 tola is used as a base , and gandhaka-1tola, tankana-1/2tola, chakramaarda beeja (*Cassia tora*) - 1/2 tola, laksha (*Laccifer lacca*)- 1/2tola are used as a ingredient.
- 5) Kala malahara⁸ : taila -1ser (930g) used as a base, and sindhoora-1/2 ser (465g) , and karpura-1tola, tuttha (Copper sulphate) -1/2 tola used as a ingredient.
- 6) Biroja ka lal malahara¹³ :Gandhaphiroja (extract of *Pinus longifolia*) -40 tola used as a base and hingula (Hgs) -1tola are used as a ingredient.
- 7) Biroja ka hara malahara¹⁴: Gandhaphiroja-1/2tola, soap (sodium palmate) -2tola are used as a base and papad kar (alkalie) -3 tola, coal (carbon)-2 tola, jangar-2 tola are used as a ingredient. Jangar is an acidic liquid kept in copper vessel and mixed with saindhava lavana/milk and left for three days in a covered state, after 3 days it converts into like blue material.
- 8) Shwetha malahara¹⁵: taila-16 tola, rala (*Shorea robusta*)-4tola are used as base and tuttha-3 masha are used as ingredient.
- 9) Gulabi malahara¹⁶: shatadhautha ghrita-10 tola used as a base, and chandana taila (*Santalum album*) -1 tola, sindhoora (lead sulphide) - 1tola, pushpanjana (zinc oxide)- 1tola, rasakarpoora (per chloride of mercury) -1/2 tola, kapoora-1 tola are used as a ingredient.
- 10) Jeevanthyadi malahara¹⁷: siktha- 8tola, rala-8tola are used as base, and jeevanti (*Leptadenia reticulata*), manjista (*Rubia cordifolia*), darvi (*Berberis aistata*), kampillaka (*Mallotus philippensis*)-4 tola each, tuttha-1tola are used as a ingredient.
- 11) Karparadi malahara¹⁸: Ingredient are karpooora-6 parts and parada (mercury), gadhaka, kunduru (Extract of *Boswellia serrata*), udumbara (*Ficus racemosa*), guggulu (Extract of *Commiphora mukal*), loban (*Styrax benzoin*) - 1part and karpara (cowry)-6parts.
- 12) Rala malahara¹⁹: taila-16 tola, rala-4 tola are used as base, and tuttha-3 masha is a ingredient.
- 13) Vranamrutha malahara²⁰ : siktha – 10 tola, atasi taila (*Linum usitatissimum*) - 20 tola are used as a base and ingredient used are gandhaphiroja-10 tola and rala-10 tola
- 14) Vranamrutha shwetha malahara²¹: siktha-5tola, refined oil-10g tola are used as a base and karpooora-1tola, saphed (borax) -10 tola are used as a ingredient.
- 15) Gulabi malahara²²: kokam taila (*Garcinia indica*) -10 tola, eranda taila (*Ricinus communis*)- 10 tola are used as a base and saphed-1tola, sindhoora-1tola are used as a ingredient.
- 16) Bhagandharanashaka malahara²³: Ingredient are rasakarpoora, sindhoora, mrudarashringa (Litherage), sapheda, shwethakadira (*Acacia catechu*), karpooora, puga (*Areaca catechu*) - 1tola each and swarnaksheerebeeja (*Euphorbia thomsoniana*)-8tola and sufficient quantity ghrita should be added as a base.
- 17) Upadamsharipu malahara²⁴: niryasa of plant-2 tola, vasaline-20 tola, are used as a base, rasa karpooora-6

- masha, karpooora- 6 masha, mrudarashringa-1 tola, shwetha khadira- 6 tola and neela tuttha- 3 masha are used as a ingredient.
- 18) Arshahara malahara²⁵: shatadhoutha ghritha- 8 tola is used as a base, and patraharatala (orpiment) - 2 tola, shwetha khadira- 2 tola are used as a ingredient.
- 19) Shirashoolantha malahara²⁶ : neelagiri taila- 6 ounce (30ml) , twak taila (*Cinnamomum zeylanica*) - 20 ounce, vasaline- 1 pound (12ounces) , paraffin – 1 pound are used as a base and loban pushpa- 3 ounce, karpooora – 2 ounce, ajamoda (*Apium graveoloens linn*) - 2 ounce are used as ingredient.
- 20) Churna malahara²⁷: eranda taila (*Ricinus communis*) - 3 tola used as a base, and churna (Lime) -5 tola used as a ingredient.
- 21) Darunanashaka malahara²⁸: sikta-2 tola, sarshapa taila (*Brassica campestris*) -18 tola used as a base, and tuttha- 1 tola, kampilika – 1 tola, shwetha kadira- 1 tola, gairika - 1 tola, savarchalavana (black salt) - 1 tola, mrudarashringa- 2 tola, maricha (*Piper longum*) -2 tola, madayantika (*Lowsonia inermis*) - 2 tola are used as ingredient.
- 22) Pamahara malahara²⁹: parada, gandaka, maricha, tuttha, sindhoora, krishnajeerika, shwetha jeera (*Cuminum cyminus*) all 1 part used as a ingredient and sufficient quantity of gritha is used as a base.
- 23) Agnidagdha malahara³⁰: Ingredients are atasi taila- 40 tola and rala- 4 tola.
- 24) Manasheeladi malahara³¹: ghritha-6 tola and madhu-6toLa are used as a base, and manasheela, sushma ela (*Elettaria cardamomum*), daruharidra (*Coscinium fenestration*), manjista, laksha ,haridra (*Curcuma longa*) each 2 tola are used as a ingredient.
- 25) Parada malahara³²: tila taila- ½ ser, paraffin-1 ser are used as a base and parada-15 tola, nimba twak- 2 ½ tola, bhringaraja (*Eclipta alba*) -2 ½ tola, sindhoora- 6 masha are used as a ingredient.
- 26) Paradadi malahara³³: ghritha-32 tola is used as a base and parada-1 tola, gandhaka-1 tola , madharasinga- 2 tola, kampilika- 4 tola, tuttha- 3 masha are used as ingredient.
- 27) Nimbadi malahara³⁴: siktha- 2 tola, ghritha- 10 tola are used as a base and nimbi patra swarasa (*Azadirachta indica*) -40 tola, rasakarpooora – 1toLa are used as a ingredient.
- 28) Paradadi malahara¹: ghritha -28 parts, rala- 1 part are used as a base and parada, gandhaka, sindhoora (lead sulphide) , kampilika, mrudarashringa, tuttha, khadira churna each 1 part are used as ingredient.
- 29) Sarjarasa malahara³⁵: taila -16 parts, sarjarasa- 4 parts are used as a base and tuttha -1 part, spatika 1 part are used as ingredient.
- 30) Sindhooradi malahara³⁶: siktha -1152 g and taila-4608 g is used as a base and naga sindhoora (lead sulphide) - 96 g, rasa sindhura (mercuric sulphide) -48g, rasakarpooora-48g and mudharasringa- 96 g are used as a ingredient.
- 31) Tankanamrutha³⁷ malahara: siktha taila - 12 tola is used as a base and tankana-2 tola, sarja kshara -1/2 tola, pushakaseesa (ferrous sulphate) -1/2 tola and peepul tree kshara -2 tola are used as a ingredient.
- 32) Gairikadhya malahara³⁸: siktha taila- 6toLa is used as a base, gairika (red oxide of iron) -1toLa, sindhoora- 1masha and haridra churna (*Curcuma longa*) -1toLa are used as a ingredient.
- 33) Mrudarashringadhya³⁹ malahara:siktha taila-1 pala is used

- as a base, suddha mudhrashringa -1 tola.
- 34) Prathama sindhooradi malahara⁴⁰: siktha taila -3 karsha is used as a base, tankana-1/2 tola, and sindhoora -1/2 tola are used as ingredient.
- 35) Dwithiya sindhooradi malahara⁴¹: siktha taila-3 karsha is used as a base, rala-1/2 tola, and sindhoora - 1/2 tola are used as ingredient.
- 36) Hinguladhya malahara⁴²: siktha taila-12 tola is used as a base, sindhoora- 1/2 tola and hingula -1/2 tola are used as a ingredient.
- 37) Hingulamrutha malahara⁴³:siktha taila-12 tola is used as a base, hingula churna -6 masha, mudharashringa, tankana ,karpoora, rasa korpoora, spatika, sindhura each 2 masha are used as a ingredient.
- 38) Navajeevana malahara⁴⁴: Purified ahiphena (*Papaver somniferum*) -3 masha, triphala (*Terminalia chebula*, *Terminalia bellirica*, *Emblica officinalis*) bhasma churna (ash) -1 tola are used as a ingredients and bee wax -6 tola and gandhaphiroja -1 tola are used as base material
- 39) Tutthamrutha malahara⁴⁵: siktha taila – 10 tola is used as a base , tuttha (copper sulphate) -20 Ratti is used as a ingredient.
- 40) Tutthakadya malahara⁴⁶: ghrita -2 tola ,rala- 1/4 pala is used as a base, tuttha (copper sulphate) – 1/8 tola, kathika (Calcium compound) - 1 tola, kaparda bhasma- 1 tola, tankana- 1 tola are used as a ingredient
- 41) Talakodaya malahara⁴⁷: siktha taila – 30 tola is used as base , haratala - 2 tola, kajjala-1 tola, harithaki (*Terminalia chebula*) - 1 tola, kadhira (*Acacia cathue*) – 1 tola, gairika-1 tola , sindhoora – 1 tola and manashila (red orpiment) – 1/2 tola are used as a ingredient.

- 42) Yashadamrutha malahara⁴⁸: siktha taila - 3kasha used as a base,yashada (zinc) -1 tola is used as ingredient.

Discussion:

From this literary search it was found that the malahara as a separate dosage form has not been mentioned in books of ayurveda written prior to 15th century A D.The concept of preparation of this dosage is to maintain the medicine intact with skin for external application. Pinda taila⁴⁹ however has a similar appearance to that of malahara,even though not named so.It contains sarjarasa, madhuchista(bee wax) and manjistha as per the classical preparation, and it attains the pinda rupa(solid form).By this it can be inferred that concept of malahara was on practice prior to 15th century.

It is observed that, if siktha taila is used as a base then the ratio of siktha taila and drug varies from 2.4:1 to 48:1. If madhuchista is used as a base in malahara the ratio of madhuchista and drug varies from 2:1 to 4:1 it depends on amount madhuchista and drugs used in preparation. If taila is used in malahara the ratio of taila and drug varies from 1:1/2 to 10:1.

The ratio of siktha taila, siktha and other base varies according to the ingredient used in the formulation. If the ingredient found to be tikshna(potent) the quantity of base is found to be more. It even varies according to the season and place

In case of rasapushpadya and rasapushpa malahara the ratio of shatadhoutha ghrita and other ingredients is 24:1,as rasapushpa is tikshna.one more propable reason for 24 parts of shatadhoutha ghrita may be consistency of the base which is thinner than madhuchista.

In gandhakadya malahara the ratio of madhuchista and drug is 4.5:1. Here tankana and karpoora acting antagonistic to the potency of sindhura (lead sulphide) and thicker consistency of madhuchista may be the reason for this ratio.

The ratio of gandhaphiroja and drug in gandhaphiroja lal malahara is 40:1. As it contains hingula as one of the ingredient the

ratio of base is more. The case with hinguladhya and hingulamrutha malahara is also similar. Gandhaphiroja hara malahara is another formulation in which ratio of base and drug is 6:1, as the drug used are mild in nature. In case of jeevanthyadi malahara the base is madhuchista (*bee wax*) and rala (*Shorea rubusta*) the ratio base and drug is 2.6:1 in this case the drugs used are herbal powders the potency of which are very less

In varnamuruta malahara the ratio of sikthataila and niryasa is 3:2. Instead of sesame oil the oil extracted from atasi is used as oil base in the preparation of siktha taila in this malahara.

Varnnamruta shwetha malahara is another formulation in which the ratio of sikthataila and churna is from 1.3:1. It may be due to ingredient like karpoora etc which is mild in nature.

Siktha taila prepared by using siktha and sarshapa(sesamen) taila in ratio of 1:9 is used as a base in darunashaka malahara the drugs of herbal origin are used as a ingredient in this formulation which are comparatively less potent therefore the quantity of siktha taila

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is less (the ratio of siktha taila and druga is 1.8:1) in darunashaka malahara .

The ratio of atasi taila (*Linum usitatissimum*) and rala (*Shorea rubusta*) 10:1 which forms a base in agnidhagdha malahara the consistency of atasi taila has to be considered as a reason for this ratio

Conclusion:

From this study on malahara, following conclusions are drawn-there is no mention of any malahara in the brihatrayies. pinda taila even though not named so ,the ingredients , method of preparation ,and the consistency resembles as that of malahara. The concept of malahara has come from unani system of Medicine. Yoga ratnakara was first to incorporate malahara kalpana to ayurveda. The three important requirement of preparation of malahara is a oil base, binding base and ingredient in powder form. The ratio of oil base, binding base and the ingredient varies from one malahara to other. This variation depends on number of ingredient and the season. The ratio can be altered according to the need of situation.

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