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Review of Kwatha Kalpana and its Modified Forms

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ABSTRACT
In Bhaishajya Kalpana there is endorsement of five fundamental basic dosage forms namely Swarasa, Kalka, Kwatha, Hima, and Phanta**.** Kwatha Kalpana is one of the most useful kalpana among all these. Kwatha, is an important dosage form as it is indicated in many diseases. It is used as ophthalmic solutions, in niruh basti, in preparation of secondary dosage forms and as a bhavna dravya in many drug purification process and also in vrana prakshalana. It has some disadvantages too like difficulties in ensuring quality control of the herbal ingredients, inconvenience in preparation, transportation, and storage etc. So kwatha is implemented to various dosage forms to prolong shelf life, increase its potency, and for greater palatability like - Rasakriya and Ghana Kalpana, Powder/tablets/capsules, Granules, Syrup, Pravahi kwatha. As a result of all these modifications kwatha has become more palatable, with higher shelf life, portable and many more.

KEYWORDS- Bhaishajya Kalpana, Kwatha, Kalpanas, Dosage forms.

INTRODUCTION

In Bhaishajya Kalpana the most commonly used five basic formulations of Ayurveda are Swarasa, Kalka, Kwatha, Hima, and Phanta**.**[1] Among all these kalpanas, Kwatha Kalpana is frequently used, as it also acts as a base for so many new dosage forms like Asava, Arishta, Taila, Avleha and Gutika in various pharmaceutical processes. It is an important dosage form because it is indicated in many ailments. Kwatha is majorly used as solution of ophthalmic medicaments in preparation of secondary dosage forms, plays a role as a bhavna dravya in many processes of drug purification, in niruh basti, for vrana prakshalana etc. Kwatha is also used as anupana. [2] Kwatha Kalpana is having upper hand because of its many unique qualities namely easy availability of raw materials, single drug-herb decoction, good adaptability, better absorption and assimilation in body system and retains many of the water-soluble portions present in raw materials.[3] Primary Ayurvedic Kalpanas have some drawbacks like less shelf life, higher chances of microbial growth,

require high dose and are unpalatable. Therefore Acharya had developed secondary preparations like fermented preparation, confectionaries, medicated oil, pills etc. which have longer shelf life i.e. stability and palatability.[4] Kwatha is very effective and widely used but has some disadvantages like difficulties in ensuring quality control of the herbal ingredients time and inconvenience required in preparation, transportation, storage, probable loss of active ingredient and is difficult to prescribe in accurate dose. [5]The short shelf life of the Kwatha is its major drawback. In today's lifestyle people doesn't have so much time to prepare Kwatha again and again so this is need of an hour to modify it in such dosage that are quite easily palatable and have better shelf life. Formulating it as per Ayurvedic principles stresses on various clauses like the quantity of water, nature of drug, intervention of heat, and addition of Prakshepa Dravya as all these factors play a major role in developing the effectiveness of the preparation.[6] Kwatha Kalpana with its relevancy to modern technology should be implemented to achieve increased shelf life, increased potency, and greater palatability.[7]

KWATHA PREPARATION

Kwatha is the liquid preparation obtained by boiling one part of 'selected dravya' in coarse powder form along with 16 parts of water. The mixture is reduced to $1/8^{th}$ part and filtered. The filterate is known as Kwatha.[8]

Ratio of water during Kwatha preparation depending on the nature of drugs – [9]

Drugs of different nature	**Ratio of water**
Soft drugs (Mridu dravya)	4 times water
Medium and hard drugs (Kathina dravya)	8 times of water
Very hard drugs (Kathinat kathina)	16 times of water

Another refrence – [10]

Drugs of different nature	**Ratio of water**
Mridu dravya (Soft drugs)	4 times of water
Kathina dravya (hard drugs)	8 times of water
Kathinat kathina(Very hard drugs)	16 times of water
Mixture of all types of drugs	8 times of water

Kwatha preparation depending on the quantity of drugs – [11]

Drug quantity	**Ratio of water**
1 karsa(12gm) to 1 pala (48gms)	16 times
1 pala (48gms) to 1 kudava (192gms)	8 times
1 kudava (192 gms) to prastha (768 gms) and above	4 times

Prakshepa dravya and their quantity- [12]

	Vataja roga	**Pittaja roga**	**Kaphaja roga**
Sugar	$1/4^{th}$ part	$1/8^{th}$ part	$1/16^{th}$ part
Honey	$1/16^{th}$ part	$1/8^{th}$ part	$1/4^{th}$ part

Jiraka, guggulu, ksara, lavana, shilajatu, hingu, trikatu: any one of them can be added in the quantity of 1 sana (3gm) to Kwatha (2 pala, 96 ml) during administration.[13]

Liquids like milk, ghee, jaggery, oil, cow's urine and any other liquids used; different kalka and churna; any of these adjuvant are added in 1 karsa (12gm) quantity to the Kwatha (2 pala; 96ml) during administration.[14]

Precautions to be taken in Kwatha Kalpana – [15]

1. Only yavakuta churna drugs should be considered to prepare Kwatha.
2. Chemically inert vessel should be used to boil Kwatha.
3. During preparation of Kwatha heat should be maintained from mild to moderate during boiling.
4. The vessel should not to be covered during boiling it should be kept open.

General dose and shelf life of Kwatha – [16]

Dose – 2 pala (96ml), administered after food for better digestion.
Shelf life – Kwatha are meant for instant use only.

ADVANCEMENT OF KWATHA KALPANA

Ayurveda always focus that high quality medicines should always be developed into other dosage forms. As in modern science also, various dosage forms are prepared from single drug to make it more easily palatable to every age group and to maintain its better shelf life and potency. Similarly in Ayurveda various researches have been done and it has been seen that Kwatha can be used as a base material for so many dosage forms in Ayurvedic medicaments. Hence, to establish this assumption literature and research papers with probable possible dosage forms were reviewed where Kwatha acts as base material and it was thoroughly explored into various dosage forms. These are the following dosage forms -

Rasakriya and Ghana Kalpana -

It is form of Kwatha Kalpana, in which Kwatha is modified into concentrated dosage form. It is obtained by heating Kwatha till it comes in semi-solid state and then it is dried to solid form.[17] Many research works have been carried out on rasakriya and Ghana Kalpana, which admits that the properties of drugs are maintained in this form also.[18] [19][20]

Powder/tablets/capsules -

To prepare powder/tablets/capsules the decoction is dried by draining the liquid from the drugs. In further processing, by using vaccum and heat the liquid is evaporated to form a semisolid paste and then poured into a spray-drier along with powder carrier and the remaining water is evaporated eventually leaving a dry powder. The addition of a carrier is very important because dried extracted herb materials will turn into a gummy solid or even a hard mass when exposed to even a small amount of moisture. Starch or other material present in it prevents this from happening. Some of the above methods of dried decoction is firstly prepared into powder, then granules and then is prescribed in the form of tablets.[21] A study has been done on Guduchyadi Kwatha fresh (GKF) and Guduchyadi Kwatha for instant use (GKI) in this study the effectiveness of both Kwatha was determined. By doing rf values in HPTLC study it was found that the phytoconstituents in instant guduchyadi Kwatha and fresh guduchyadi Kwatha were mostly found similar and it indicates that the quality of drug does not change by changing its dosage form from Kwatha to instant use form like tablet, capsule.[22]

Granules -

Kwatha can also be modified in the form of granules. Granules comes under solid dosage form and they are prepared by the process of granulation. A granule is an aggregation of component particles that is held together by the presence of bonds of finite strength. Granulation may be defined as a size enlargement process which converts small particles into physically stronger and larger agglomerates.[23] To prepare granules the fresh prepared Kwatha should be boiled on mild heat till it reduced upto semisolid form and continuous stirring should be done without covering the vessel.[24][25] Homogeneous mixing should be done by continuous

stirring to get uniform mass. This prepared mass is passed from sieve no 20. Granules are prepared and dried at room temperature, and then, oven dried at 60°C. [26]

Syrup -

A syrup is a thick sticky solution of sugar and water often flavored or medicated.[27] In addition to purified water and any medicinal agent other additives like sucrose, solubilizing agents or sugar substitutes, colourants, thickneres and stabilizers may be added. In some cases syrup is partly replaced by dextrose, glycerin, sorbitol or other polyhydric alcohols to reduce crystallization of sucrose or to increase solubility of medicaments and other additives etc.[28] To prepare syrup initially, decoction is prepared by taking drug and adding 8 times water and boiled until total volume becomes one-fourth of the initial volume. Then the decoction is cooled and filtered. Filtrate is taken to prepare final herbal syrup and adding sugar in the concentration of 66.7% and the mixture is boiled up to 1–2 thread consistency.[29] One of the important advancements in syrup is that there is the absence of microbial load and can be preserved for a long duration. This form is advanced in terms of shelf life because decoction can be kept only for 24 h. [30]

Pravahi kwatha/aristha -

It is formed by fermentation process or it may be considered as secondary formulation of Kwatha prepared by adding sweetening and fermenting agent. Ayurveda Sara Samgraha mentions about "Pravahi Kwatha" but no direct references are observed and Aristhas (fermented preparation) acquire self-generated alcohol which acts as natural preservative attained through conventional process.[31] Pravahi kwatha can be compared to Elixirs in modern dosage form. Elixirs are clear, sweetened, hydro-alcoholic, flavoured liquid.

DISCUSSION

Kwatha Kalpana plays a very important role in formation of secondary preparations. It acts as a base to prepare many dosage forms like – Ghan kalpana, syrup, granules, powder, tablets etc. During preparation of Kwatha some precautions should be taken like - Only yavakuta churna drugs should be considered to prepare Kwatha. Chemically, inert vessel should be used to boil Kwatha, and heat should be maintained from mild to moderate during boiling, the vessel should not to be covered during boiling. According to Acharyas, different quantity of water is mentioned for different types of drugs, drugs are categorized as soft drugs, hard drugs, very hard drugs. Quantity of water to be taken for preparation of drugs is also described according to quantity of material. Kwatha acts as a base for so many formulations but it has some drawbacks like shorter shelf life and less palatablility. So it is need of time, to prepare dosage forms from Kwatha which make it more palatable, having more stability, easy to carry and for longer use. And new dosage forms of Kwatha had shown wonderful results on this way.

CONCLUSION

This paper concludes that, one of the most efficacious and significant dosage form in Ayurveda pharmaceutics is Kwatha Kalpana. According to classical texts Kwatha are indicated in many diseases and are lonely able to treat disease. It acts as a primary source for many secondary preparations. But Kwatha has some demerits, to overcome these demerits, Kwatha is modified into many dosage forms like - granules, syrup, rasakriya, tablet, capsule with extract form, and pravahi Kwatha. And all these modified dosage forms of Kwatha have shown very nice results without altering potency of drug, and have higher shelf life. which makes it easier for people to adopt it in today's lifestyle.

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