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Pharmaceutical Modification Of Balakasaghna Kwatha Into Balakasaghna Syrup: A Novel Pediatric Herbal Formulation

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Abstract: In *Ayurveda ,Kwatha Kalpana* is described in one among the *Panchavidha kashaya kalpana*[1]. *Balaashaghna Kwatha* is a classical *Ayurvedic kwatha* prescribed in pediatric conditions such as fever, teething troubles, respratory illness and gastrointestinal disturbances. Despite its efficacy, it faces challenges in administration to children due to bitterness, preparation time, though *Kwatha kalpana* is pharmaceutically viable and therapeutically effective formulation and has limited shelf life. This study focuses on modifying the *kwatha* into a palatable and stable syrup formulation *Balakasaghna* Syrup (*Sharakara Kalpana*) enhancing its usability, especially in pediatric patients. The formulation retained efficacy while improving organoleptic properties and shelf life.

Keywords: *Kwatha kalpana, Ayurveda, Balakasagna Kwatha,* Syrup.

INTRODUCTION

Kwatha kalpana is considered as one of the basic *kalpana* among *Panchavidha Kashaya Kalpana* . A detailed description about *kwatha kalpana* is present in all *samhita* and in literatures of *Ayurveda* of medieval period. *Kwatha* is the filtered decoction obtained by boiling coarse powder of drugs in proportion of four(*mridu*), eight (*madhyama*), or sixteen (*kathina*) times of water and reduced to one - fourth[2].

In *Ayurveda*, decoctions (*Kwatha*) are a commonly prescribed dosage form for various conditions, including pediatric disorders. However, due to poor palatability, preparation difficulties, and limited shelf life, their utility in modern pediatric practice is limited. *Balakasaghna Kwatha* is described in *Ayurvedic* classical texts such as *Bhaisajya Ratnavali*[3,4] and is composed of herbs like *Bala, Shunti, Guduchi,* and *Yashtimadhu* etc, which are known for their immunomodulatory, antipyretic, and digestive actions[5] .

Children are especially sensitive to taste, and bitter or pungent medicines like traditional *kwathas* are often rejected. Additionally, the need for daily decoction preparation limits ease of use. Pharmaceutical modernization through syrup formulation(*Sharakara Kalpana*)[6] enhances compliance, dose uniformity, shelf life, and acceptability in children[6].

Sharkara is a palatable liquid formulation which will be in consistency of honey with a higher shelf life compared to *kwatha.*[7]The reference of *sharkara* is available in the context of *sharkara sahita madhya* in ancient literatures of *Ayurveda* . The explanation of *Sharkara kalpana* is mentioned in the recent books of *Ayurveda* and a special type of *sharbath* mentioned in later periods of books. To any of the liquid preperation like *Hima, Phanta, Arka, Kwatha* etc double quantity of sugar is added and boiled over mild fire until the liquid attains syrup consistency.Then it is filtered to get ride of any impurities present in sugar.

Synoyms of kwatha: Shrut,kashaya,swarasanishpanna, niryuha

Materials and Methods

Table no .1Ingredients of *Balakasaghna Kwatha*

INGREDIENTS	BOTANICAL NAME
Chitraka	*Plumbago zylenica*
Ashwagandha	*Withania somnifera*
Musta	*Ceprus rotandus*
Shunti	*Zingebera officinale*
Amalaki	*Emblica offisnalis*
Haritaki	*Terminalia chebula*
Bibhitaki	*Terminalia bellirica*
Lavanga	*Syzygium aromaticum*
Yasthimadhu	*Glycyrrhiza glabra*
Bala	*Sida cardifolia*
Guduchi	*Tinospora cardifolia*

Preperation of *Balakasagna kwatha*.(BK).

Each ingredient of the BK were taken in quantity of 10 gms in coarse powder (total 90 gms) and eight parts of potable water (720ml) was added boiled on low to medium heat in stainless steel vessel, on a LPG stove till the liquid portion was reduced to one fourth of the total quantity followed by filteration[8]. The total quantity of BK obtained was 350ml.

Preperation of *Balakasaghna Syrup*.(BS)

The total quantity of *kwatha* taken was 300 ml and the quantity of the sugar added was 600g(double part). After complete dissolving of sugar it was filtered and was reheated again until getting one thread consistency or honey consistency and stored in an air tight container . The total amount of BS obtained was 650ml[9].

- According to classical references, the herbs and their actions [10]:
  Bala – Balya
  Shunti – Deepana, Pachana,Grahi
  Guduchi – Jwaraghna, Rasayana
  Yashtimadhu – Varnya, kanthasudharaka,Rasayana
  Triphala- Rasayana, jwaraghna
- *Lavanga - deepana,pachana*
- *Musta- deepana,pachana, grahi*

***Rasa Guna Virya Vipaka* of following ingredients.[11]**

INGREDIENT	*RASA*	*GUNA*	*VIRYA*	*VIPAKA*
Chitraka	*Katu*	*Laghu, tikshna*	*Ushna*	*Katu*
Bala	*Madhura, kashaya*	*Guru ,snigdha*	*sheeta*	*Madhura*
Musta	*Tikta, kashaya*	*Laghu ,ruksha*	*Sheeta*	*Katu*
Amalaki	*Amla,tikta, kashaya*	*Laghu ,ruksha*	*sheeta*	*Madhura*
Haritaki	*Lavana varjit pancharasa*	*Laghu ,ruksha,Sara*	*Ushna*	*Madhura*
Bibitaki	*Kashaya, madhura,tikta*	*Laghu ,ruksha*	*Ushns*	*Madhura*
Lavanga	*Tikta ,kashaya,katu*	*Laghu , snigdha*	*Ushna*	*Katu*
Guduchi	*Tikta,kashaya*	*Laghu , snigdha*	*Ushna*	*Madhura*
Yasthimadhu	*Madhura*	*Guru , snigdha*	*Sheeta*	*Madhura*
Shunti	*Katu*	*Laghu , snigdha, tikshna*	*Ushna*	*Madhura*

OBSERVATION

Parameter	Observation
Color & Appearance	Brown, viscous liquid
Odor	Mild herbal
Taste	Sweet, palatable
pH	5.8 – 6.5
Stability (30 Days)	No microbial growth

DISCUSSION

Balakasaghna Kwatha is a classical *Ayurvedic* formulation mentioned in *Bhaishajya Ratnavali*, primarily indicated for pediatric respiratory conditions such as *Kasa* (cough), *Shwasa* (breathing difficulty), and *Agni Mandya* (digestive impairment). Though therapeutically potent, the traditional *kwatha* (decoction) poses significant challenges in pediatric administration due to its bitter taste, bulk dosage, and short shelf-life. To overcome these limitations, the formulation was modified into a syrup form, offering enhanced palatability, convenience of dosage, and extended shelf-life through proper preservation methods. This modification aligns with modern pharmaceutical principles, making traditional formulations more patient-compliant, especially in the pediatric age group.

The modified syrup retains all the essential herbs from the original *kwatha,* including *Guduchi*(Tenospra carddifolia)[11], *Madhuka* (Glycorrhiza glabra)[12], and *Shunthi* (Zingiber officinale)[13], which possess proven antitussive, anti-inflammatory, and carminative properties.[14]

Several studies suggest that converting *kwathas* into syrups does not significantly alter the pharmacological action of the ingredients, provided decoction preparation is carried out at correct temperatures and concentration. Furthermore, syrup formulation facilitates accurate dosing, which is crucial in pediatric practice. Thus, the *Balakashaghna* Syrup stands as a bridge between traditional *Ayurveda* and modern pharmaceutical needs. It holds potential not only in clinical practice but also in market acceptability, making it a promising advancement in pediatric *Ayurvedic* formulations.

The herbal constituents offer synergistic benefits: *Guduchi* and *Yashtimadhu* support immunity; *Bala* promotes growth; *Shunti* and *Musta* improve digestion—making the syrup effective for common pediatric conditions .The need to modernize Ayurvedic dosage forms, especially for children, is well supported by recent research advocating improved delivery systems without compromising classical integrity [15].The influence of sugar was significant in all the organoleptic characters of syrup . The colour changed from dark brown to brown, free liquid nature of *kwatha* turns to viscous nature,characterstic *Amalaki,Haritaki*[16,17] smell was changed to aromatic honey smell and the taste was changed from *tikta,kashaya,amla* to *Madhura,tikta,kashaya*[18] as the properties of sugar was imbibed into *kwatha* and brought these changes[19,20].

CONCLUSION

Balakasaghna Syrup is a practical, palatable, and pharmaceutically stable alternative to the classical *kwatha*. It significantly enhances acceptability in children and demonstrates the potential of integrating *Ayurvedic* wisdom with modern pharmaceutical techniques. This model can be applied to other classical formulations for better pediatric utility.

Scope for further studies

The development and preliminary evaluation of *Balakashagna* Syrup mark a significant step toward integrating classical *Ayurvedic* formulations with contemporary dosage forms. However, to enhance the understanding and efficacy of this formulation, several avenues for further research remain open:

- Preclinical and Clinical Evaluation.
- Pharmacological Studies.
- Phytochemical and Analytical Studies.
- Formulation Enhancement.
- Comparative Studies.
- Intellectual property and Commercialization.

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