

Balchaturbhadra churna: review and recent updates

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ABSTRACT:

Balchaturbhadra churna is one of the Ayurveda formulations that has no controversies related to composition of the formulation in different ancient texts of Ayurveda. The aim of this research is to critically review the formulation and search the available resources in order to obtain updates related to this formulation. To achieve the aim, various sources like ancient Ayurveda texts, books, journals, online databases and so on were referred. It was observed that this formulation continues to be one of the vastly and highest administered formulation in management of paediatric diseases. It is concluded that this formulation continues to be non-toxic and safe for administration in paediatric population. It also seems that this formulation stands out to be a potential drug of choice in SARS-CoV-

2 infection. This underlines the need of re-visiting and re-assessing the formulations in context of current prevailing health conditions.

KEYWORDS: *Balchaturbhadra churna*, Ayurveda paediatric, paediatric treatment management.

INTRODUCTION:

Among the eight branches of Ayurveda, Kaumarbhrutya deals with the nurturing, hygiene and care of child as well as prophylactic and therapeutic management of diseases in children. Various formulations have been advised in Ayurveda text for therapeutic management of diseases in paediatric population. Among all formulations advised for paediatric disease management, '*Balchaturbhadra Churna*' (BC) is one of the vastly used formulations

by *Ayurveda* physicians. The documented usage of BC has been since 11th century A.D^[1]. BC is indicated for management of fever (*Jwara*), cough (*Kasa*), diarrhoea (*Atisaar*) in paediatric population. It is observed that there were few attempts ^{[2],[3]} made earlier to document a review study on BC. However, as per current health situation across the globe, newer pathogens are been encountered that cause newer diseases. Such scenarios have maintained the constant need of re-searching and re-visiting the drugs for exploring their therapeutic potential as well as safety profile to tackle the newer challenges with least safety issues. In line with this thought, this paper has attempted to review and revisit BC, one of the majorly prescribed medicines in paediatric patients, to review the textual formulation and recent researches/updates on BC.

MATERIALS AND METHODS:

Being a review article, the sources to obtain the data and information were ancient *Ayurveda* text, academic books, journals, newsletter, online databases, websites and so on.

Formulation Review:

BC was described firstly in text of *Chakradatta* authored by *Chakrapani* in 11th century A.D^[1]. Since then, it is observed that this formulation has been included in *Gadanigraha*^[4], *Sharangadhar Samhita*^[5], *Bhavprakash*^[6], *Yogratnakar*^[7], *Bhaishajyaratnavali*^[8], *Bhaishajya Samhita*^[9], *Bharat Bhaishajya Ratnakar*^[10], *Bala Tantra*^[11]. BC comprises for four drugs – *Ativisha*, *Musta*, *Pippali* and *Karkatshrungi*, each in equal quantities. (Table 1)

Table 1: *Ayurveda* Pharmacological profile of ingredients of BC^{[12]–[17]}

Sanskrit Name	Family with Latin Name	Proportion	Rasa	Veerya	Vipaka	Guna	Karma	Doshaghna
<i>Ativisha</i> (Root)	Ranunculaceae; <i>Aconitum Heterophyllum</i> Wall. Ex Royle	1 part	<i>Katu, Tikta</i>	<i>Ushna</i>	<i>Katu</i>	<i>Laghu, Ruksha</i>	<i>Pachana, Deepana</i>	<i>Kapha-pitta har</i>
<i>Musta</i> (Rhizome)	Cyperaceae; <i>Cyperus rotundus</i> Linn	1 part	<i>Katu, Tikta, Kashaya</i>	<i>Sheeta</i>	<i>Katu</i>	<i>Laghu, Ruksha</i>	<i>Grahi, Pachana, Deepana, Swedajanaka, Mutrajanaka, Snyavardhaka, Artavajanaka, Keshavardhaka, Vranaropaka</i>	<i>Kapha-pitta-rakta har</i>

<i>Pippali</i> (Fruit)	Piperaceae; <i>Piper</i> <i>Longum</i> Linn.	1 part	<i>Katu</i>	<i>Anush</i> <i>na</i>	<i>Madh</i> <i>ur</i>	<i>Laghu</i> , <i>Snigdh</i> <i>a</i> , <i>Ushna</i>	<i>Deepana</i> , <i>Vrisya</i> , <i>Rasayana</i> , <i>Rechaka</i> , <i>Pittala</i>	<i>Vata-</i> <i>kapha har</i>
<i>Karkatshru</i> <i>ngi</i> (Gall)	Anacardiacea e; <i>Pistacia</i> <i>Integerrima</i> Sw. Ex <i>Brandis</i>	1 part	<i>Tikta</i> , <i>Kash</i> <i>ay</i>	<i>Ushna</i>	<i>Katu</i>	<i>Guru</i>	<i>Kasahara</i> , <i>Hikkanigraha</i> <i>ana</i>	<i>Kapha-</i> <i>vata har</i>

RESULTS AND DISCUSSION:

There are four drugs in BC; out of which three drugs possess *Katu Tikta*, two drugs possess *Ushna veerya*, three drugs possess *Madhur Vipaka*, three drugs possess *Laghu* property. Thus, the overall assessment of the formulation concludes that BC may possess *Katu-Tikta rasa*, *Ushna veerya*, *Madhur vipaka* with majorly *Laghu* property. These helps to action therapeutically in the indications like Fever (*jwara*), Cough (*Kasa*) and Diarrhoea (*Atisaar*).

In 2011, toxicological studies of BC [18],[19] were published concluding that did not produce any signs and symptoms of toxicity and mortality up to a dosage of 2000 mg/kg in rats. For acute toxicity, BC is unlikely to induce any drastic toxic effects; for long term toxicity, BC did not affect the parameters; BC is not likely to have mutagenicity potential since bone marrow cellularity was unaffected and preserved well. BC is devoid of serious organ degenerative potential. Till date, there is no published evidence where BC toxicity is observed as valid. Hence, the safety profile of BC continues to be safe with no toxic effects expected at human therapeutic dose.

Moreover, BC produces significant suppression of cell mediated immunity.

It was noted in an antimicrobial study [20] of ingredients of BC that *Pippali* and *Karkatshringi* showed promising antimicrobial activity against *E. coli*, *E. faecalis*, and *V. cholerae*.

It was observed that two interventional trials [21],[22] was registered retrospectively in CTRI portal where BC is administered as one of the interventional drugs. The final outcome of both trials is pending to be updated in CTRI and hence we are unable to derive inference in this situation.

We came across two publications [23],[24] where BC is one of the or only interventional drug administered. However, the reporting format and the drafting guidelines seems to be lesser than expectation to derive to any valid inference about BC through both publications.

It is interesting to observe that two Case Studies were published where BC is included either as the only drug or as combination with other *Shaman* and *Shodhan* treatments. One case study [25] is about a 04 years old male patient case of

Duchenne Muscular Dystrophy (DMD) where the authors have used multi-modal treatment in management of DMD that includes BC as one of the oral medications. The paper states that though, there is no cure for DMD in any system of medicines, however, with valid *Ayurveda* regimen including *Shodhan* procedures with internal medications (including BC) can improve function, ambulation and thus increase life expectancy of the diseased child. In other case study ^[26], 07 months old female child was diagnosed with *Balashosha* where BC was one of the oral medications administered in the treatment regimen that was customized as per patient's *avastha*. The outcome of the regimen was positive and promising where near to all clinical complaints were relieved and the weight of about 02 kgs was gradually gained during the entire period of treatment.

There is no documented evidence for Case Series or Clinical Trials with BC as interventional drug. In addition to this, the above two case studies had other medicines and treatment modalities administered in conjunction to BC, thus, the outcome is result of association of entire regimen administered. This leads to unclear understanding of the demarcation of therapeutic effect of BC.

The palatability of drug is the highest impacting factor for oral drug administration and drug compliance. On this front, BC has challenge as BC do not taste sweet further lowering the palatability of oral administration and thus, creating high chances for poor drug compliance. In order to address this challenge, innovative and

scientific efforts ^[27] were made to prepare BC in syrup form without losing the integrity of the formulation and without compromising on the ancient logic to formulate BC. Authors attempted to prepare the BC syrup as per the laid guidelines in *Ayurveda* texts from different primary media viz., BC *Kwath*, BC *Hima*, BC *Phanta* and BC *Arka*. It was concluded that BC syrup prepared from *Kwatha* was superior as compared to other media. This valuable input can be tapped by all *Ayurveda* pharmaceutical industries and manufacture BC syrup from BC *kwath*. Currently, there are few *Ayurveda* pharmaceutical industries that manufacture BC syrup; however, the methodology of preparation remains unclear for such manufacturing.

It was observed that Ministry of AYUSH had taken immense efforts to release the home care guidelines for children and advisory to AYUSH practitioners for prophylactic care in children during COVID-19 pandemic. In this advisory, under symptomatic care regimen for child of < 1 year up to 12 years of age, BC has been advised exclusively for gastrointestinal symptoms ^[28].

We came across an interesting pre-print of an *in-silico* study ^[29] where the phytochemicals from the ingredients of BC were studied with the drug targets of SARS-CoV-2. The phytochemicals studied were aconitine, lappaconitine from *Ativisha*, 2'-hydroxyisorientin from *Karkatshrungi* and guineesine, piperidine and piperonic acid from *Pippali*. These phytochemicals hold the potential to bind favourably with the SARS-CoV-2 drug targets, thus concluding that BC

is a potential drug of choice in management of SARS-CoV-2 infection in paediatric population.

CONCLUSION:

BC has been studied at various fronts and similar efforts for re-viewing and re-visiting are essential to understand the formulation in the context of current prevailing health conditions. BC has been improving endless numbers of paediatric patients' disease management and health. There is a need of robust, scientific yet ethical conduct of clinical trials with BC as interventional drug in order to obtain and analyse the human data. It is concluded that BC is non-toxic as well as high in efficacy and safe to administer in its prescribed therapeutic dose in children. The efforts of Ministry of AYUSH in highlighting BC have increased the reach of BC to common public by many folds.

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CONFLICT OF INTERESTS:

None.

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