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"CHARAKA'S FIFTY MAHAKASHAYA AS A FRAMEWORK FOR PHARMACOLOGICAL RESEARCH: A CRITICAL REVIEW OF VALIDATION APPROACHES AND A PROPOSED EVIDENCE MAP"

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ABSTRACT
In the fourth chapter of Sutrasthana, Charaka arranges five hundred drug entries into fifty groups of ten, the mahakashaya, each named by a shared action such as jivaniya (vitalising), lekhaniya (scraping), shothahara (anti-inflammatory) or krimighna (anthelmintic). This action-based classification is a natural starting point for pharmacological research, because it specifies a testable effect for each group. This review examines how the mahakashaya have been studied and proposes a structured evidence map. Most published work has validated individual member drugs for the action of their group, often using single extracts in standard animal or in vitro models. Studies of a whole group as a single preparation are rare. Charaka's Shothahara group corresponds to Dashamula; a study of two Laghupanchamula variants, half of that group, showed anti-inflammatory activity in rats without toxicity at 10 g/kg in mice. Reviews of other groups, such as Krimighna, have collated member-level studies rather than tested the group. Four obstacles hinder systematic validation. Action terms are not operationally defined. Many member drugs have disputed or unknown identities. The texts do not specify how a group is to be used as a combined preparation. Commonly used animal models do not always match the classical action. We propose an evidence map that charts, for each of the fifty groups, the operational definition of its action, the identity status of its members, member-level evidence, group-level evidence and clinical evidence. The map would show where the classification is supported, where it is untested, and where research should start.

KEYWORDS: Mahakashaya, Charaka Samhita, classification, Dashamula, shothahara, evidence map, Dravyaguna, reverse pharmacology

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INTRODUCTION

The fourth chapter of the Charaka Samhita's Sutrasthana sets out fifty groups of ten drugs each, the mahakashaya, which together contain five hundred drug entries.[1] Each group is named after a shared action: jivaniya (vitalising), brimhaniya (nourishing), lekhaniya (scraping), bhedaniya (breaking), sandhaniya (uniting), deepaniya (digestive stimulant), balya (strengthening), varnya (complexion-promoting), kanthya (beneficial to the throat), hridya (cardiac), shothahara (anti-inflammatory), jvarahara (antipyretic), krimighna (anthelmintic), vishaghna (antitoxic), stanyajanana (galactagogue), shukrajanana (spermatogenic), prajasthapana (pregnancy-sustaining), vayahsthapana (age-stabilising) and so on.[1] Charaka adds that these lists are illustrative rather than exhaustive and that a skilled physician can extend them.[1]

This action-based classification is unusual among ancient pharmacologies and offers a natural starting point for modern research. Each group states a testable claim: that its members share a particular effect. Patwardhan and colleagues argued that classical Ayurvedic knowledge can guide drug discovery by starting from documented human use and working backwards to mechanisms, an approach often called reverse pharmacology.[2] The mahakashaya are an obvious resource for such work. This review examines how they have been studied, identifies obstacles to systematic validation, and proposes a structured evidence map.

METHODS

This is a critical review. We examined published studies and reviews that evaluated mahakashaya groups or their members for the classical group action, and literature on methods for mapping evidence, framed by established scoping methodology.[3,4]

HOW THE MAHAKASHAYA HAVE BEEN STUDIED

Three approaches can be distinguished (Table 1).

Table 1. Approaches to validating the mahakashaya.

Approach	Description	Strengths and limits
Member-level	Individual drugs of a group are tested for the group action, usually as extracts in standard models	Most common; tests each drug but not the group concept; identity of member must be secure
Group-level	The whole group, or a defined subset, is prepared as a combined preparation and tested	Tests the classical claim directly; few studies; preparation form not specified by Charaka
Review-level	Published studies on members are collated for a group[5]	Useful overview; inherits limitations of the primary studies; rarely systematic

Member-level studies dominate the literature. They are often conducted in single laboratories, use solvent extracts unlike classical preparations, and test the action in one standard animal model.[6] They provide evidence about individual drugs but do not test the central idea of the mahakashaya, that ten drugs share an action and can be combined.

Group-level studies are rare. The Shothahara mahakashaya contains the ten roots that make up Dashamula.[1] A study of two classical Laghupanchamula formulations, which together represent half of this group, found that both inhibited carrageenan- and formalin-induced paw oedema and granuloma formation in rats, and that neither showed acute toxicity at 10 g/kg in mice.[7] This is the kind of study that tests a classical group directly, although even here only half the group was tested and the anti-inflammatory models chosen represent only part of what shotha means classically.

Review-level work has collated member studies for particular groups. A review of the Krimighna group, for example, summarised antibacterial, anthelmintic and antiprotozoal studies of its ten members.[5] Such reviews are valuable starting points but are rarely systematic and do not distinguish between strong and weak evidence.

OBSTACLES TO SYSTEMATIC VALIDATION

Operational definition of actions

Many group names describe effects that have no single modern equivalent. Jivaniya, vayahsthapana and balya refer to vitality, ageing and strength; varnya to complexion; hridya to the heart in a sense that includes the mind. Before a group can be tested, its action must be defined operationally, with outcomes that a modern study can measure and that a classical scholar would accept as reasonable.

Table 2. Examples of operational definitions for mahakashaya actions.

Group	Classical meaning (simplified)	Possible measurable outcomes
Shothahara	Reduces swelling	Acute and chronic inflammation models; inflammatory mediators[7]
Krimighna	Destroys krimi	Anthelmintic, antiprotozoal and antibacterial assays[5]
Stanyajanana	Promotes breast milk	Milk yield, prolactin and mammary changes in lactating animals; infant weight gain in humans
Lekhaniya	Scrapes and reduces accumulated tissue	Adiposity, lipid profile, body composition
Mutravirechaniya	Promotes urine flow	Urine volume and electrolyte excretion
Vayahsthapana	Stabilises age	Oxidative stress, senescence markers, lifespan in model organisms; functional outcomes in older adults

These definitions are illustrative and should be agreed with classical scholars before use.

Identity of member drugs

Several mahakashaya members are known only by names whose botanical identity is disputed or lost. Even well-known names may denote different plants in different traditions, as illustrated by the debate over Brahmi and Mandukaparni,[8] and drugs in trade are frequently substituted, as with Bala.[9] A group cannot be tested if some of its members cannot be identified, and member-level evidence is meaningless if the wrong plant was studied.

Form of a group preparation

Charaka does not state that all ten members of a group are to be used together, or in what proportions or form.[1] Groups may have been intended as lists from which a physician selects. Group-level studies must therefore choose a preparation, and the choice should be explicit and justified, with chemical characterisation of the final product.[10]

Model relevance

Standard animal models capture only part of a classical action. Carrageenan paw oedema, for instance, measures acute inflammation, whereas classical shotha includes chronic and systemic swellings of several types.[1] Validation should use more than one model where the classical action is broad, and should progress to human studies where possible.[6,11]

A PROPOSED EVIDENCE MAP

An evidence map systematically identifies and charts the available research in a broad field, displaying where evidence exists and where it is lacking, without necessarily synthesising effect sizes.[12] Such a map is well suited to the mahakashaya, which comprise fifty separate claims. We propose that each group be charted across five domains (Table 3).

Table 3. Proposed domains for an evidence map of the fifty mahakashaya.

Domain	Content for each group
Operational definition	Agreed measurable outcomes corresponding to the classical action
Identity status	Number of members with undisputed, disputed or unknown botanical identity
Member-level evidence	Number of members with in vitro, animal and human studies for the group action, with a quality rating
Group-level evidence	Studies of the group or a defined subset as a combined preparation
Clinical evidence	Controlled human studies of members or the group for the classical action

A DRAVYAGUNA PERSPECTIVE

The mahakashaya are a classification by karma (action), which is the most directly testable of the Dravyaguna categories. Testing them is therefore not an attempt to reduce Ayurveda to pharmacology but to examine one of its most explicit empirical claims. Charaka's own remark that the lists are illustrative[1] invites the same open-ended inquiry: if a group's action is confirmed, its logic can be extended to other drugs; if it is not, the classification can be refined.

LIMITATIONS

This review is not systematic, and the number of group-level studies may be underestimated because

many are published in regional journals or theses. The operational definitions offered are illustrative and require consensus.

CONCLUSION

Charaka's fifty mahakashaya offer a uniquely testable framework for pharmacological research, but they have mostly been studied one drug at a time, with few studies of whole groups and little attention to defining actions or securing identities. A systematic evidence map built on operational definitions and identity status would show where the classification is supported and where research should begin, turning a classical list into a research agenda.

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