



Review Article

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A REVIEW ON CONCEPTUAL EVALUATION OF PATHYA- APATHYA IN RASACHIKITSA WITH REFERENCE TO FOOD-DRUG INTERACTIONS

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ABSTRACT

Pathya-Apathya (wholesome-unwholesome) diet and lifestyle are the fundamental principles in Ayurveda, prescribed according to disease conditions to enhance treatment outcomes. In the context of Rasachikitsa, classical texts emphasize specific Pathya and Apathya guidelines according to Rasoushadhis. This is because Rasoushadhis are Vijatiya Dravya, i.e. Nirendriya Dravya includes heavy metals, minerals. They differ from Sajatiya dravya, which are easily metabolized in the body. Rasoushadhis, despite undergoing Shodhana and Samskara, retain potent properties and may interact differently with dietary substances after administration. In present era, medicines are frequently taken without medical consultation. Neglect of Pathya-Apathya principles in Rasachikitsa increases risk of altered drug-food interactions and hazardous outcomes. This paper highlights probable Rasoushadhi- drug interactions and their impact on the body. Analysis indicates that Samyoga of Rasoushadhi with specific dietary substances may lead to either, reduced or exaggerated drug action or adverse drug reactions. For instance, when Kampilaka interacts with Nagveli Patra, the Rechana Karma of Kankushtha is significantly enhanced, resulting in Atiyoga. Conversely, substances belonging to the Kakarashtaka Varga inhibit the absorption of Parada within the body, thereby limiting its therapeutic utility. Similarly, Kulatha interacts with Shilajatu by breaking it down in the body, which diminishes the potency and effectiveness of Shilajatu. Hence knowledge of Pathya- Apathya is crucial in Rasachikitsa as it regulates Rasoushadhi-diet interactions, ensuring safe metabolism, preventing adverse effects, and enhancing therapeutic efficacy.

Keywords: Adverse drug reactions, Food- drug interactions, Pathya- Apathya, Rasachikitsa.

INTRODUCTION

Rasashastra is a branch of Ayurveda dealing with the preparation and therapeutic application of mercurial, metallic, mineral, poisonous plant formulations, and some animal products¹. These formulations are given in Alpa Matra (effective in very small doses), cures Aruchi (do not cause anorexia), and Kshipra Arogya Dayi (those are quick in action and providing health benefits)². As stated in Rasendra Sara Samgraha, for curable diseases, Bheshaja Chikitsa is considered most effective, whereas Rasa Chikitsa is preferred for incurable conditions, highlighting its unique role in Ayurveda.³

Since these formulations contain heavy metals (such as mercury and lead), toxic minerals (like copper sulphate and arsenic trioxide), and poisonous plants (such as aconite and nux vomica), their use without proper Shodhana, faulty preparation, or irrational application can result in hazardous effects. Furthermore, administering Rasaushadhis without adequate knowledge of Pathya and Apathya may reduce efficacy, exaggerate pharmacological effects, or cause adverse reactions.

Pathya (wholesome) refers to dietary items and activities that support bodily functions and are mentally pleasing as said by Acharya Charaka⁴. Medicines are not effective until these are followed. While Apathya (unwholesome) includes those that disrupt health and are disliked by the mind. Generally, Pathya-Apathya Ahara are prescribed according to disease conditions to enhance treatment outcomes. In the context of Rasachikitsa, classical texts highlight specific dietary guidelines (Pathya and Apathya Ahara) based on the type of Rasaushadhi used. For

instance, Kakaradi Gana is considered Apathya during Parada Sevana, Amla Rasa should be avoided during Gandhaka Sevana, Tambula Sevana is restricted in Kankushtha, and Masha is advised against during the use of Loha Bhasma etc.

Knowledge of Apathya Ahara plays an important role during therapies of Rasashastra. Rasoushadhis are Parthiva and Nirendriya Dravyas (inorganic substances) as said by Acharya Charaka.⁵ Nirendriya Dravyas exhibit slower or more complex metabolic processing in the body as compared to Sendriya Dravyas (organic substances). Sendriya Dravyas being Sajatiya (biocompatible) with human body are easily digested. In case of Nirendriya Dravyas, the active constituents of specific Rasaushadhis may interact with particular dietary components, leading to various biochemical reactions and consequent physiological effects.

This principle of Pathya Apathya in Rasa Aushadhis aligns with food- drug interactions in modern science. The drug-food interaction causes changes in the clinical effects of drugs. Certain food components can interact with the active sites of drugs and change their effects by either increasing or decreasing their action. In some cases, the combination of a drug and food produce a new effect that is not seen with either of them alone, which cause harm to the body⁶. Some examples of drug-food interactions include the following: Vitamin K can decrease the effectiveness of the blood thinner warfarin, reducing its anticoagulant action. Citrus juices such as orange, lemon, raspberry, and tangerine juice can enhance the activity of drugs like felodipine and nifedipine. Similarly, when monoamine

oxidase inhibitors are taken with foods containing tyramine, they may cause a hypertensive crisis⁷.

Understanding modern food–drug interactions help in interpreting the concept of Apathya described in relation to Rasaushadhis. In case of Rasoushadhis, despite undergoing Shodhana (purification) and Samskara (processing) they retain potent properties and may interact differently with dietary substances after administration and cause various side effects. For example, Kakaradi Gana lowers the action of Parada. Kankushta has Rechana (purgative) properties. During its Sevana Kala (administration period), intake of Tambula (betel leaf) exaggerates the effects of Kankushta and cause diarrhoea.

Such interactions often occur due to accidental misuse or a lack of awareness about the active ingredients involved. To improve treatment outcomes and prevent adverse drug reactions, clinicians need to be aware of major food–drug incompatibilities and the risk factors that increase the chances of such reactions. Therefore, this paper discusses the concept of Pathya Apathya in Rasa Chikitsa and explores possible drug–diet interactions to reduce harmful effects and enhance the therapeutic effectiveness of Rasaushadhis.

Review of literature

A comprehensive literature review was conducted to gather information on Pathya and Apathya Ahara mentioned in Rasachikitsa. Classical Rasa Shastra texts such as Rasaratna Samuccaya, Rasatarangini, Rasendra Sara Samgraha, Ayurveda Prakash, Charaka Samhita, and Sushruta Samhita were reviewed, along with relevant PG theses and published research papers. Databases including PubMed, Scopus, Google Scholar, AYUSH Research Portal, DHARA, and Shodhganga were searched using keywords such as “Rasachikitsa”, “Pathya Apathya Ahara”, “Rasaushadhi interactions”, and food–drug interactions in Ayurveda. Additionally, modern scientific literature on food–drug interactions was reviewed to provide comparative insights.

The collected data were critically analysed to understand the possible interactions between Rasaushadhis and dietary components. Emphasis was placed on identifying how different types of food substances could alter the absorption, metabolism, or pharmacodynamic activity of Rasaushadhis. The potential mechanisms through which food substances may influence the pharmacological activity, efficacy, and safety of Rasaushadhis were interpreted, compiled and presented in the paper.

Pathya and Apathya in Rasachikitsa

A critical review of classical Ayurvedic texts—Rasa Ratna Samuchchaya, Rasa Tarangini, Ayurveda Prakasha, Brihad Rasaraja Sundara—reveals most of the Rasaushadhis are prescribed with Pathya and Apathya.

Table 1: Pathya Apathya during Parada Sevana by different authors

| Reference | Parada Sevana | |
|------------------------|--|---|
| | Pathya | Apathya |
| Rasa Ratna Samuchchaya | Fresh Ghee, Saindhava Lavana, Dhaniya (<i>Coriandrum sativum</i>), Jirak (Cumin), Adraka (<i>Zingiber officinale</i>), Sanskarita Dhaniya, Patola (<i>Pointed Gourd</i>), Alabu (<i>Bottle Gourd</i>), Wheat, Old Shali, Godugdha, (Milk) Dahi (Curd), Ghee, Hansodaka, Mudga Yush | Bruhati, (<i>Solanum Indicum</i>) Bilwa, (<i>Aegle Marmelos</i>) Kushmanda (<i>Benincasa hispida</i>) Karvellaka (Bitter Gourd), Masha (Black Gram), Masura (Red Lentils), Kulitha, (Horse Gram) Sarshapa, (Mustard Seed) Tila (sesame oil), Langhana, Udvartana, Snana, Mamsa, Madhya, Asava, Anupa Mamsa, Kanji, eating food on Kadali Patra. Kansya Patra, Guru-Vishtambhi Bhojana, (Heavy and dry foods) Tikshna, Ushna Bhojana |
| Rasa Tarangini | Baingana (Brinjal), Patola, (<i>Trichosanthes dioica</i>) Punarnava Patra (<i>Boerhavia Diffusa</i>), Musta (<i>Cyperus Rotundus</i>) | Kakaradi Gana – Kushmanda, (Petha), Kamatha (Tarabuja), Bera, Kulitha, Kakoda, Kanchanar Pushpa, Kakdi (Cucumber), Karvellaka (Bitter gourd), Kanji, Kamalpushpa Shaka, Kasumbhapushpa Shaka, Kapotha Mamsa (Meat of pigeon) Narangi, Nariyala, Nimbu (Lemon) etc Amla Dravyas, Anupa Desha Mansa, food served on banana leaf, Sauvarchala Namak, food prepared in Kansa vessel, Guru Ahara, Katu, Amla Tikta Ahara, Tikshna, Ushna Guna Ahara ⁸ |

Table 2: Pathya Apathya during Rasa Dravyas Sevana

| SN | Rasa Dravyas | Reference | Pathya | Apathya |
|----|--------------------|--------------------------------------|------------------|---|
| 1. | Gandhaka (Sulphur) | Ayurveda Prakash ⁹ | Jangala Mamsa | Amla Dravya Shaka, Kakarashtaka Dravyas like Karavellaka (Bitter gourd), Ushna Virya Dravyas Dwidala (Cereals) Sevana, Stree Prasanga, (contact with women), Yaana (Travelling) |
| | | Rasa Ratna Samuchchaya ¹⁰ | | Kshara, Amla, Tail, Nistusha Yava, or Godhumakruta Kanji, Dahakaraka things, Amlakari things like Vanshakari, Shami Dhanya (cereals) |
| | | Rasa Tarangini ¹¹ | | Amla Dravya Shaka, Ushna Dravya |
| 2. | Abhraka | Ayurveda Prakash ¹² | | Kshara, Amla, Vidala Anna, (Chana, Urida,) Kukumber, Karela, Baingan, Kaira, Tail (Oil), - all this and also food prepared from these things |
| 3. | Hartala | Bhavaprakash ¹³ | Saindhava Lavana | Lavan, Amla, Katu Rasa Dravyas, Atapa Sevana, (exposure to air) |
| 4. | Swarna | Rasendra Chudamani ¹⁴ | | Bilwa Phala (<i>Aegle Marmelos</i>) |
| 5. | Loha Bhasma | Ayurveda Prakash ¹⁵ | | Kushmanda, Tila Tail, Masha, Rajjika, Madhya, Amla Dravya, Masura |

Table 3: Pathya During Visha Sevana

| SN | Rasa Dravyas | Reference | Pathya |
|----|---------------|--------------------------------|--|
| 1. | Visha Dravyas | Ayurveda Prakash ¹⁶ | Ghee, Kshira, (milk) Sharkara, (sugar) Madhu, (honey) Gehu, (wheat) Shali, Marich, Saindhava, Draksha, Madhura Peya, Shital Jala, Shita Pradesh, Shita Kala, Brahmacharya (self-restraint) |

Food-Drug Interaction

A food-drug interaction occurs when the presence of certain foods or beverages affects the activity, absorption, metabolism, or excretion of a medication in the body. This can result in either increased or decreased effectiveness of the drug, or the appearance of unwanted side effects¹⁷. Foods may alter pharmacokinetics (how the drug is absorbed, distributed, metabolized, or eliminated) or pharmacodynamics (the drug's effect on the body), making careful management of diet crucial when taking medications.

Examples of Food-Drug Interactions

Tea and Coffee: Both tea and coffee decrease iron absorption. Tea does this by forming tannate complexes in the intestine, while coffee significantly reduces iron uptake.

Spinach: When consumed with anticoagulants, spinach reduces their therapeutic effect, potentially increasing the risk of clotting.

Garlic: Garlic can interact with drugs such as warfarin, antiretrovirals like saquinavir and ritonavir, leading to altered drug action or increased risk of side effects.

Citrus Juices: Citrus juices (such as grapefruit juice) can increase the bioavailability of medications like felodipine and nifedipine, potentially intensifying their effects and side effects.

Milk: Milk prevents absorption of certain antibiotics including doxycycline and ciprofloxacin, reducing their effectiveness. Milk combined with aluminium hydroxide antacid may cause milk-alkali syndrome.

Additional Dietary Interactions

Fiber Diet: High dietary fibre intake inhibits the bioavailability of minerals, primarily by binding metallic ions and limiting their absorption. Ingestion of 15g fibre per day for 18 days can decrease plasma vitamin B6 levels and insoluble fibre tends to lower serum GIP and glucagon levels. Fiber may reduce pancreatic enzyme activity by affecting pH.

Polyunsaturated Fats: These fats can inhibit carotene metabolism, impacting vitamin A status.

Calcium Phosphate: This compound decreases iron absorption.

Zinc Supplements: High intake of zinc can inhibit iron absorption, presenting a risk of nutrient imbalance.

Fatty Diets: Free fatty acids can decrease calcium absorption.

Vitamin E Supplementation: Intake of 200 IU vitamin E daily for three weeks reduces serum vitamin A levels.

Interpretation and correlation of Food- drug interaction and Food- Rasaushadhis interaction

Classical Ayurvedic literature describes several diets–drug combinations that either enhance, diminish, or alter the pharmacological actions of Rasaushadhis. These interactions can be interpreted through the lens of modern pharmacology as food–drug interactions, which affect the absorption, metabolism, or pharmacodynamic response of a drug. Based on their mechanism, four types of diet–drug interactions can be identified in the context of Rasoushadhi administration.

Type 1: Inhibitory Interaction (Blocking of Drug Action Site)

This type occurs when the dietary substance interferes with the drug's binding to its action site, such as a receptor or enzyme system. The dietary component occupies or obstructs the binding site, preventing the drug from exhibiting its intended pharmacological effect. A classic example is the interaction between Parada and Kakaradi Gana Dravya. The Kakaradi Gana components block the receptor or active site where Parada (mercury) is supposed to act, leading to diminished or nullified therapeutic efficacy. This corresponds to competitive inhibition at the action site, reducing the bioavailability and pharmacodynamic response of Parada.

Type 2: Synergistic Interaction (Potentiating Enhancement of Drug Action)

In this category, the food or dietary substance interacts synergistically with the drug at its site of action, leading to an exaggerated pharmacological response. The combination of Kankushta (*Garcinia morella* Gaertn.) and Tambula (betel leaf) represents this mechanism, where both act simultaneously on the same site of action, resulting in an enhanced Rechana Karma (purgative effect). Such potentiation may cause excessive or undesired physiological responses, such as Ati Mala Pravritti (increased defecation). This resembles pharmacodynamic synergy observed in modern pharmacology, where co-administration enhances the intensity or duration of the drug's effect.

Type 3: Transformative Interaction (Formation of a New Compound)

This type involves a biochemical reaction between the drug and the dietary substance, forming a new compound that possesses different properties from either of the original substances. The combination of Gandhaka (sulphur) and Amla Rasa (sour-tasting food) represents this interaction. The acidic medium reacts with sulphur, leading to the formation of a new chemical complex within the body. Consequently, the original pharmacological action of Gandhaka is lost, and the newly formed substance may exhibit altered or even harmful properties. This reflects a metabolic transformation similar to drug incompatibility or degradation reactions in contemporary medicine.

Type 4: Degradative Interaction (Disintegration or Deactivation of Drug)

In this form of interaction, the dietary component causes the breakdown or disintegration of the drug, rendering it pharmacologically inactive. The interaction between Shilajit (*Asphaltum punjabianum*) and Kulatha (horse gram) exemplifies this mechanism. When taken together, Kulatha causes disintegration of Shilajit before it reaches its site of action, leading to the loss of its therapeutic potential. Such interactions correspond to chemical incompatibility or premature degradation in modern pharmacology, resulting in the absence of the intended pharmacological response.

These four types of interactions illustrate how dietary substances can alter the pharmacokinetics and pharmacodynamics of Rasaushadhis. Inhibitory and degradative interactions reduce drug efficacy; while potentiating and transformative interactions can lead to excessive or unpredictable effects. The understanding of these mechanisms provides a scientific rationale for the Pathya–Apathya (wholesome–unwholesome diet) guidelines outlined in classical texts.

Review of Experimental Study

Scientific studies have provided substantial evidence supporting the classical Ayurvedic caution regarding the consumption of Lauha Bhasma with certain unwholesome dietary substances such as sesame oil and black gram seeds (Masha) (*Phaseolus mungo* Linn.). Traditionally, Ayurvedic texts have emphasized that these combinations should be avoided due to their potential to hinder the therapeutic efficacy of Rasaushadhis. Modern experimental studies have confirmed these observations through both animal and human research models.

In animal studies, administration of Lauha Bhasma along with an unwholesome diet comprising sesame oil and black gram seeds led to significant disturbances in iron metabolism. The studies reported decreased absorption of Lauha Bhasma, resulting in premature excretion of iron before its proper utilization or its deposition in a non-functional form within body tissues. Such

altered iron metabolism was reflected by a marked reduction in haemoglobin concentration and total red blood cell count in phenyl hydrazine-induced anaemic rats. Further investigations suggested that phytates or phytic acid present in black gram (Masha) seeds form insoluble complexes with iron, thereby reducing its bioavailability and hindering its uptake through the gastrointestinal tract. This interaction falls under the transformative type of food–drug interaction, wherein phytic acid interacts with iron to form an insoluble and non-bioavailable complex, thereby preventing iron from binding to its physiological site of action and subsequently impairing its metabolic utilization.

Complementary human studies revealed similar outcomes. Volunteers consuming Lauha Bhasma with sesame oil and black gram seeds exhibited a decreased iron-binding capacity and impaired iron delivery to the erythroid marrow. This led to insufficient erythropoiesis, indicating that co-administration of these dietary substances interferes with the physiological utilization of iron. Additionally, excessive hepatic iron storage observed in animal models suggested possible toxicity or metabolic imbalance arising from improper iron assimilation.

These findings provide a scientific basis for the Pathya–Apathya (dietary guidelines) prescribed in Ayurvedic texts, underscoring the importance of avoiding adverse food–drug interactions to ensure optimal therapeutic efficacy of Rasaushadhi.

CONCLUSION

Pathya–Apathya is a critical determinant of safety and efficacy in Rasachikitsa. Four principal types of Rasoushadhi–diet interactions: inhibitory (e.g., Parada with Kakaradi Gana reducing drug action), synergistic (Kankushta with Tambula causing exaggerated Rechana), transformative (Gandhaka with Amla Rasa forming altered compounds), and degradative (Shilajit with Kulatha leading to loss of potency). These interactions influence drug absorption, metabolism, and pharmacodynamic response, closely resembling modern food–drug interaction mechanisms. A review of experimental studies on Lauha Bhasma administered with sesame oil and black gram has demonstrated reduced iron bioavailability and altered haematological parameters, thereby supporting classical dietary cautions. Hence, Pathya in Rasachikitsa is a scientifically grounded principle essential for optimizing efficacy and preventing adverse effects.

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