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AYURVEDIC DRUG ACTIONS: WHOLE DRUG VS. DRUG EXTRACTS

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ABSTRACT

Ayurveda, the ancient system of medicine, employs natural substances derived from plants, minerals, and animals to promote health and treat diseases. In a successful course of treatment selecting the right dosage and form is essential. The efficacy of Ayurvedic remedies depends on the pharmacodynamic and pharmacokinetic properties of these substances. According to the Rasa Panchaka principles, Ayurveda attributes a drug's effects to any one of the Rasa-Vipaka Guna-Virya-Prabhava, where each element has a distinct function or a combined function. Meanwhile Extracts and isolated chemicals are now widely used due to scientific advancements. Therefore, Extract a chemically separated derivative could not be useful and could have negative consequences. A significant distinction arises in modern-day applications between the use of the whole drug and isolated drug extracts. This article explores the actions of Ayurvedic drugs, comparing whole drugs to their extracts, and evaluates their advantages and limitations.

KEYWORDS: Whole drug, drug extract, drug action.

INTRODUCTION

Along with making an accurate clinical diagnosis, choosing the right dose and dosage form are crucial components of clinical practice. According to Ayurveda, the patient should be treated as whole rather than the illness. The classical strategy was to utilize medicaments individually developed to fit the requirements of the patient. Rogi bala, Roga bala, desha, kala and the patient's lifestyle all influence the drug form choice.

किञ्चिद्रसेन कुरुते कर्म वीर्येण चापरम्॥ द्रव्यं गुणेन पाकेन प्रभावेण च किञ्चन। रसं विपाकस्तौ वीर्यं प्रभावस्तानपोहति॥[1] (C.S.Su 26/69)

In Ayurveda, the notion of Rasa Panchaka—that is, Rasa, Guna, Virya, Vipaka, and Prabhava—is used to describe how drugs work. Some of the drug's effects can be ascribed to Prabhava, some to Virya, some to Vipaka, some to Rasa, and some to Guna. As a result, every component in a medication plays a distinct part in how it works.

On the other hand, recent developments have shown that the treatment approach is more disease-oriented and primarily focused on obtaining immediate effects, which explains the widespread use of extracts and isolated substances in therapies. An isolated chemical derivative cannot take the place of the entire medication because any isolated and used component may not work in the same way as when used as a whole. Despite of its specific action it may cause adverse effects also.

Let’s have a brief look into the idea of drug action with special reference to whole drug and drug extracts.

❖ PHARMACODYNAMIC ACTIONS

Pharmacodynamics refers to how a drug affects the body, including its mechanism of action and therapeutic effects. In Ayurveda, the whole drug is typically a combination of various bioactive compounds working synergistically to produce therapeutic effects. On the other hand, extracts often isolate one or a few active compounds.

Whole Drug

1. Synergistic Action: The whole drug contains multiple phytochemicals, including alkaloids, flavonoids, tannins, and essential oils. These compounds interact synergistically to enhance therapeutic outcomes.

Example: Ashvagandha (Withania somnifera) is Katu, Tikta, Kashaya rasa; Madhura vipaka; Usna virya dravya. These qualities as a whole manage Kapha and Vata rogas effectively.[2] The root contains withanolides, saponins, and other compounds. Together, they provide adaptogenic, anti-inflammatory, and neuroprotective effects.

2. Broad-Spectrum Activity: Whole drugs target multiple pathways and are effective in complex diseases involving multiple physiological systems.

Example: Triphala, a combination of three fruits, helps to calm kapha and pitta, supports digestive health, used in treatment of diabetes[3], antioxidant defense, and immune modulation.

3. Balancing Effects: Ayurvedic principles emphasize balancing the doshas (Vata, Pitta, and Kapha). It is further claimed that, the Rasadi panchakas are responsible for Kshaya, Vriddhi or samyata of doshas[4]. The whole drug often contains components that counteract side effects of individual compounds, maintaining equilibrium.

Drug Extract

1. Potency and Specificity: Drug extracts are concentrated forms of one or more active compounds, providing high potency and targeted action.

Example: Curcumin extracted from Haridra (Curcuma longa) has strong anti-inflammatory and antioxidant properties. Curcumin inhibits the growth of various bacteria like Streptococci, Staphylococci, and Lactobacillus etc. and also prevents Helicobacter pylori strains.

2. Predictability: Isolated extracts offer more predictable pharmacodynamic effects, making them suitable for standardization and modern clinical trials.

❖ PHARMACOKINETIC ACTIONS

Pharmacokinetics refers to how the body absorbs, distributes, metabolizes, and eliminates a drug. The complexity of whole drugs and extracts influences their pharmacokinetic profiles differently.

Whole Drug

1. Gradual Absorption: Whole drugs often contain fibers, lipids, and other components that modulate the release and absorption of active ingredients.

Different qualities of dravya i.e., Rasa panchaka gets absorbed in different parts of GIT undergo agnipaka leading to formation of poshaka dhatu. As a result of agnipaka, the drug gets metabolized, absorbed and excreted in the form of urine, stool and sweat.

Acarya caraka has clearly emphasized the fate of all the drug components in the following manner;

रसो निपाते द्रव्याणां, विपाकः कर्मनिष्ठया| वीर्यं यावदधीवासान्निपाताच्चोपलभ्यते|| [5](C.S.Su 26/66)

2. Enhanced Bioavailability: Some components in the whole drug enhance the bioavailability of active compounds. For instance, the Vrishya property of drug Ashvagandha gets enhanced when it is given with milk.

3. Metabolic Support: The whole drug includes compounds that support detoxification and metabolism, reducing toxicity.

Drug Extract

1. Rapid Onset: Extracts often provide quicker onset of action due to higher concentrations of active compounds.

- Example: A standardized guggulsterone extract from Guggul (Commiphora mukul) shows faster lipid-lowering effects.

2. Risk of Poor Bioavailability: Many extracts, like curcumin, have low water solubility and poor absorption. Formulations like liposomal curcumin or curcumin with piperine are required to overcome this limitation.

3. Potential Toxicity: High concentrations of isolated compounds may overwhelm the body's metabolic pathways, increasing the risk of adverse effects.

❖ DOSAGE DIFFERENCES

The dosage of Ayurvedic drugs varies significantly between whole drugs and extracts due to differences in their concentration and potency.

Whole Drug

1. **Higher Dosage Required:** Whole drugs typically require larger doses to achieve therapeutic effects because the active compounds are less concentrated.
   - Example: Ashvagandha root powder is often administered at doses of 3-6 grams daily for general health benefits.
2. **Longer Duration:** Whole drugs act gradually, necessitating consistent and prolonged use for cumulative effects.
3. **Tolerability:** Higher doses are generally well-tolerated due to the buffering effects of additional phytochemicals and fibers present in the whole drug.

Drug Extract

1. **Lower Dosage Required:** Extracts are highly concentrated, so smaller doses are sufficient to achieve therapeutic effects.

- Example: A standardized extract of withanolides from Ashvagandha is effective at doses as low as 300-600 mg daily.

2. **Faster Action:** The high concentration of active compounds provides a more immediate therapeutic effect, making extracts ideal for acute conditions.
3. **Higher Risk of Side Effects:** Due to the potency of extracts, dosing must be precise to avoid adverse effects, especially in sensitive individuals.

❖ PROS AND CONS

Whole Drug

****Pros****

- Synergistic effects enhance therapeutic efficacy.
- Natural buffering minimizes side effects.
- Broad-spectrum action aligns with holistic Ayurvedic principles.

****Cons****

- Variability in composition due to geographical and seasonal factors.
- Challenges in standardization and clinical validation.

Drug Extract

****Pros****

- High potency and specific targeting of diseases.
- Easier to standardize for consistent dosing.
- Greater acceptance in modern pharmacology and clinical research.

****Cons****

- Loss of synergy found in the whole drug.
- Potential for higher toxicity and reduced bioavailability.

❖ PRACTICAL APPLICATIONS

1. Whole Drug Usage

- Recommended for chronic conditions requiring long-term management, where synergy and balance are crucial.
- Example: *Brahmi* (Bacopa monnieri) in its whole herb form is used for cognitive enhancement over time.

2. Extract Usage

- Suitable for acute conditions requiring rapid action or in formulations requiring specific active compounds.
- Example: Boswellic acid from *Shallaki* (Boswellia serrata) is used in osteoarthritis for its strong anti-inflammatory properties.

DISCUSSION

Suitability for Modern Ayurvedic Clinical Practice

Ayurveda advocates for the utilization of drugs in their entirety, emphasizing the integration of various components into a single entity during therapeutic applications. Along these lines, herbal preparations undergo meticulous pharmaceutical processes such as Churna and Kashaya, ensuring their efficacy and safety. Innovations in dosage forms have been employed to optimize drug performance, prolong shelf life, and enhance bioavailability. This comprehensive approach adheres to Ayurvedic principles, prioritizing natural remedies with minimal adverse effects for individuals seeking well-rounded and traditional methods of treatment.

With the recent advances in medical treatment, we have witnessed a significant shift towards a more disease-focused approach. The primary goal of these modalities is to achieve rapid and effective results. This has consequently led to a notable rise in the utilization of various extracts and isolated compounds in therapeutic practices. These substances have proven to align harmoniously with the principles and expectations of evidence-based medicine. Their integration facilitates a smoother process of clinical validation through rigorous trials and regulatory approval. As the field continues to evolve, the strategic use of these substances holds promise for advancing the standard of care and improving patient outcomes in diverse medical settings.

By integrating these two elements, practitioners of Ayurveda can tap into a wider spectrum of therapeutic properties and enhance the overall efficacy of treatments. This harmonious integration of targeted drug extracts and whole drugs not only aligns with the traditional principles of Ayurvedic medicine but also incorporates contemporary scientific knowledge on the specific bioactive compounds responsible for the medicinal effects observed in various plants and herbs. Ultimately, this integrative approach offers a balanced and sophisticated method of healing, thus expanding the possibilities for personalized and effective health interventions within the realm of modern Ayurvedic practice.

CONCLUSION

The choice between utilizing whole drugs and drug extracts in Ayurvedic medicine is a multifaceted decision that relies heavily on various factors such as the intended therapeutic goal, the specific disease condition being addressed, and the unique needs of each individual patient. One central concept in Ayurveda is the preservation of body homeostasis, which is considered a fundamental principle for achieving comprehensive and beneficial outcomes. Furthermore, the aspect of attaining rapid therapeutic effects and relief is equally important in the realm of treatment approaches. Whole drugs embody the holistic essence of Ayurvedic philosophy by offering a balanced and multi-faceted approach to healing. On the other hand, drug extracts are designed to meet modern requirements for precision, potency, and standardization in pharmacological treatments. The integration of both whole drugs and drug extracts in Ayurvedic pharmacology presents a unique opportunity to blend the wisdom of ancient traditions with the advancements of modern science. By embracing this integration, practitioners can tap into a rich tapestry of knowledge and techniques to deliver comprehensive and effective treatments that cater to the diverse needs of patients in today's world.

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