

**ROLE OF ANUPANA IN AYURVED AND MODERN SCIENCE WITH  
SPECIAL REFERENCE TO MEDICINE AS WELL AS AHARA****Nirmala Hariram Mehta<sup>1\*</sup> and Sarika Kandharkar<sup>2</sup>**

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Article Received on  
11 April 2024,

Revised on 01 May 2024,  
Accepted on 21 May 2024

DOI: 10.20959/wjpr202411-32590



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**ABSTRACT**

*Ayurveda* has a unique approach to maintain health of an individual and to cure diseases. According to *Ayurveda*, there does not exist anything which is not medicinal. The food we eat and the water we drink, can influence the status of our body. *Anupana* is a unique concept mentioned in our science, in which various liquid as well as solid items are logically administered along with various food and medicine. *Anupana* is explicated along with food stuffs (*Ahara*) as well as medications (*Aushadha*) under different conditions. In context of food, *Anupana* helps in its better digestion and absorption and provides complete nourishment to the body. While in the administration of medicine it is not only for palatability but for carrying the drug to target site by which it increases its absorption and bio availability to target sites. The terms which can be taken to understand the concepts of *Anupana* from modern system of medicine are vehicle, bio enhancer, adjuvant or synergist and carrier through which the actions

like drug absorption, drug companion, drug delivery and bioavailability of the drug takes place. The mode of action of *Anupana* explained by *Acharya* is that, as the oil spread in the water, the medicine also gets spread by the effect of which the drug action gets enhanced. *Anupana* plays a major role in potentiating drug action through pharmacodynamics and pharmacokinetics. However, its importance and practical utility is not fully recognized and applied in clinical practice.

**KEYWORDS:-** *Anupana*, Vehicle, Adjuvant, *Ahara*, *Aushadha*, *Ayurveda*.

## INTRODUCTION

*Ayurveda* has a distinctive way of administration of *Ahara* and *Aushada* along with different types of *Anupana* based on the *Dosha*, *Roga*, *Kala* etc., which yields different therapeutic effect. Hence in the clinical practice, the knowledge of specific action of drug with particular *Anupana* should be taken into consideration. *Anupana* consists of two words ‘*Anu*’ (Paschat/after) and ‘*Pana*’ (Drinking). So, it is defined as a liquid material, which is taken along with or after the meal and drug. Apart from providing palatability, it is beneficial for transporting the drug to the target site and also helps in better absorption, assimilation and confers sustenance to the body.<sup>[1]</sup> Mainly *Brihatrayi* emphasized *Anupana* with respect to *Ahara*, but later in the period of *Sharangadhara*, it was *Anupana* with *Aushada* which was given more significance. The action of *Anupana* is cited with a simile as, when a drop of oil dropped in vessel containing water spreads quickly, similarly when *Anupana* is administered; it pervades the medicine all over the body quickly.<sup>[2]</sup> It can increase the palatability of the food or medicine, can improve the digestion and absorption and also act as a vehicle which carries the drug to their target site. Hence in clinical practice, the knowledge of specific action of drug with particular *Anupana* should be taken into consideration.

## Etymology

The word *Anupana* is derived out of two words: *Anu*+*Pana*

The word “*Anu*” is *Avyaya* and *upsarga vishesha*. It indicates *Paschata* (after).

*Pana* is,, *Kleeba*” *linga* i.e. “*Napumsaka linga*” which is derived out of “*Paa*” *dhatu* and “*lyut*” *Pratyaya*. It is indicated for drinking.<sup>[3]</sup>

**अनुपान - अनु+पण (अणु उपसर्ग पा धातु + ल्यूट प्रत्यय) (शब्दकल्पद्रुम)**

## Definition

The substance which is taken with or after food or drug intake is called as *Anupana*.<sup>[4]</sup> It enhances the effects of drug and helps in disease mitigation.<sup>[5]</sup> The concept of vehicle, adjuvant or carrier is rooted in *Anupana*.

**अनुपान- अनु पश्चाद् सह वा पीयते इति अनुपानं (अष्टाङ्ग हृदय सूत्र ८/४७- हेमाद्रि)**

**तत्तद् रोगघ्नं भेषज्यम् भेषजस्यानुपीयते यच्च सहायकारी स्याद् अनुपानम् तद् उच्यते (र.त.)**

## Properties

It adds relish to the food, nourishes the body, replenishes the lost tissues, provides energy, promotes strength, aids in digestion and assimilation of food properly thereby promoting longevity.<sup>[6,7]</sup>

*Mahendra jala* (Rain water) is considered as best variety of *Anupana*.<sup>[8]</sup> Water is best among all types of *Anupana*, because it is source for all rasa gets which gets easily assimilated in the body of all organisms and have *jeevaniya* properties. It may enhance the absorption, action and therapeutic effect of the principal drug.<sup>[9]</sup>

## Types

*Anupana* can be classified based on the utility

1. **Aharopayogi:** *Anupana* advocated with food articles

### Nature of *anupana* for *ahara*

The liquid having opposite qualities to that of *ahara*, considered as best *Anupana* for that particular food, but it should not be harmful to dhatus. It is also true for deciding the *Anupana*, whenever it is not mentioned.<sup>[13]</sup>

यदाहारगुणैः पानं विपरीतं तदिष्यते । अन्नानुपानं धातूनां दृष्टं यन्न विरोधि च ॥ सूत्र २७/३१९॥

**Aushadhopayogi:** *Anupana* advocated with drugs in the context of *Rogadi Varga*, *Anupana* is been classified into.<sup>[10]</sup>

### Nature of *anupana* for *aushadhi*

A clever *vaidya* should always prescribe drug with proper *Anupana*, keeping track of various factors which increases the efficacy of the disease.<sup>[14]</sup>

यत्किञ्चित् औषध वैद्यः देयं रोगानुपानतः तत्तादगुणकरं ज्ञेयं अनुपानबलादिह ॥ यो० २० रसायन ६॥

- a. **Kramana:** *Anupana* is that which is administered in delay.
- b. **Pachana:** *Anupana* is given in the night, without delaying but immediately.

## Importance

*Anupana* helps in delivery of drug to the target organs and its assimilation in the body with pace just like oil drop spreads over water.<sup>[11]</sup> When *Anupana* is not taken properly, food gets dislodged in the stomach and bolus is not formed which causes difficulty in digestion.<sup>[12]</sup>

यथा तैलं जले क्षिप्तं क्षणेनैव प्रसर्पति ।

अनुपानबलादंगे तथा सर्पति भेषजम् ॥ शा० सं० म० ६/५॥

स्थिरतागतमल्किन्नमन्नमद्रवपायिनाम् ॥४३९॥

भवत्याबाधजननमनुपानमतः पिबेत् ॥ सु० सू० ४६ ॥

### Dosage of *anupana*<sup>[15]</sup>

Dose of *Anupana* depends on Doshas

- *Vata Rogas* - 1 Pala
- *Pitta Rogas* - 2 Pala
- *Kapha Rogas* - 3 Pala

### *Anupana* selection criteria<sup>[16]</sup>

The *Anupana* has to be selected based on different factors like *Vyadhi*, *Kala*, *Dravya* and *Ahara*. *Anupana* selected on above basis yields fruitful result in treatment.

### *Anupana kala*<sup>[17]</sup>

The *Anupana* in the context of *Ahara Sevana* is divided into three categories based on *Kaala* i.e. *Adipana* is intake of liquid substances prior or before to the meals. This brings about *Karshana* of the body and hence can be indicated in *Sthoulya*. The liquid material which is taken in between the food is called *Madhyapana* and it helps to sustain the body, while *Antapana* is the *Anupana* taken at the end of the meals and this does *Brumhana*

### *Anupana dravya*<sup>[23]</sup>

Several *Anupana Dravya* are quoted in classics like *Sheetala Jala* (Cold water), *Ushna Jala* (Hot water), *Asava* (Fermented liquids), *Arista* (Wines), *Phalamla* (Alcohol prepared from fruits), *Dhanyamla* (Alcohol prepared from grains), *Ksheera* (Milk) and *Rasa* (Meat soup).

***Shreshta anupana***:<sup>[24]</sup> The rain water is considered as the best *anupana*.

**Table no. 1: *Anupana* vs *Kalpana* (Su. Su. 46).**

<i>Kalpana</i>	<i>Anupana</i>
<i>Avaleha</i>	<i>Ksheera ikshurasa yusha</i> (Sha. Madhym khanda)
<i>Sneha</i>	<i>Ushnodaka</i>

Table no. 2: *Anupana vs Kaala Bhavaprakash nidana haritakyadivarga.*

<b>Dravya</b>	<b>Kaala</b>	<b>Anupana</b>
Haritaki	Varsha	Saindhava
	Sharad	Sharkara
	Haemant	Shunti
	Shishira	Pippali
	Vasanta	Madhu
	Greeshma	Guda

Table no. 3: *Anupana vs Rog.*

<b>Roga</b>	<b>Anupana</b>
Shosha	Mamsa rasa
Sthaulya	Madhudaka <sup>[20]</sup>
Krimi	Vidanga
Unmada	Purana Ghrita
Grahani	Takra
Ajeerna	Ushnodaka
Kasa	Kantakari
Vatvyadhi	Lashuna
Jwara	Shadanga Paniya

Table no. 4: *Anupana vs Ahara dravya (Su. Su. 46).*

<b>Ahara dravya</b>	<b>Anupana</b>
Shashtika Shali	Ksheera
Yava Godhuma Pishtanna etc.	Sheetal Jala
Mudgadi Dhanya	Mamsa Rasa
Masha	Dhanyamla

Table no. 5: *Anupana vs Dosha (AS.Su.10/Cha.Su.27).<sup>[22]</sup>*

<b>Dosha</b>	<b>Anupana</b>
Vata	Snigdha, Ushna, Amla kanjika, Taila, Mamsarasa
Pitta	Madhura, Sheeta, Sita, Sharkarodaka, Ghrita
Kapha	Ruksha, Ushna, Madhu, Triphalodaka
Sannipata	Adrodaka with Madhu

Table no. 6: *Anupana vs Rasa (Ka.Ka.5).*

<b>Rasa</b>	<b>Anupana</b>
Madhura	Katu rasa
Amla	Lavana, madhura rasa
Lavana	Amla rasa
Katu	Tikta rasa
Tikta	Amla rasa
Kashaya	Madhura rasa
Sarva rasa	Ksheera

**Table no. 7:1: Anupana vs Dravya(Bhava Prakasha MadhyamKhand Ikshuvarg/guduchi).**

<i>Dravya</i>	<i>Vikara</i>	<i>Anupana</i>
<i>Guduchi</i>	<i>Vata vikara</i>	<i>Ghrita</i>
	<i>Pitta vikara</i>	<i>Sita</i>
	<i>Kapha vikara</i>	<i>Madhu</i>
	<i>Vibhanda</i>	<i>Guda</i>
	<i>Vatarakta</i>	<i>Eranda taila</i>

**Table no. 7: 2: Guda.**

<i>Dravya</i>	<i>Vikara</i>	<i>Anupana</i>
	<i>Vata vikara</i>	<i>Shunti</i>
<i>Guda</i>	<i>Pitta vikara</i>	<i>Haritaki</i>
	<i>Kapha vikara</i>	<i>Aadraka</i>

### Mode of action

Mode of action of *Anupana* explained by Acharya *Sarngadhara* with a simile that, as the drop of oil put on stable water spreads so quickly, in the similar way. *Anupana* helps for quick absorption and assimilation of the drug in the body. When we administer the medicines along with proper *Anupana*, it spread quickly due to the *Yogavahi* and *Vyavayi* properties of the base. Honey is the most commonly used *Anupana* in Ayurvedic medicine, due to its *Yogavahi* property. Sometimes *Agryoushadhas* or other medicines which pacify the disease is also used as *Anupanas*. *Anupanas* can also be used for sustaining the drug action as in chronic diseases like *Tailapana in Vatavyadi*. *Vishahara* properties of *Anupana Dravyas* also a probable mode of action in *Rasa Oushadis*.

### Significance of anupana

1. *Anupana* along with *Aushadha* not only acts as a vehicle for it but also a very important factor which helps in absorption and assimilation of the same.
2. *Anupana* act as an adjuvant or synergists to the drug in treating the disease.
3. *Anupana* increases drug palatability by improving taste, consistency and by masking the odor of the drug.
4. Some drugs produce ill effect if not purified properly, here *Anupana* may mask or reduce the undesired effect of the drug.

5. *Anupana* helps in quick distribution and disintegration of medicine molecules and hence medicine get absorbed very quickly.
6. Though medicines have multiple disease curing property, *Anupana* takes medicine to the right pathway and helps in getting desired action.
7. Significance of *Anupana* along with *ahara* should be understood from its *Guna Karma* elaborated in *Brihatrayis*. According to *Charaka Samhita* proper administration of *Anupana* with *Ahara* brings refreshment of body quickly, helps in easy digestion resulting in the promotion of longevity, strength, pleasure etc., softening and liquefying the hard mass of food. *Susruta Samhita* highlighted some specific points on importance of *Anupana* related to *Ahara*, the food which is defective or heavy or taken in excess quantity is digested easily by *Anupana Dravyas*. If a small quantity of water is not consumed frequently during a meal, the food will not remain moist. Instead, it become dry and cause many ailments in the body. Therefore, *Anupana* is required for proper digestion of the food.

### Contraindications<sup>[19]</sup>

In following conditions, *Anupana* is contraindicated, so proper care should be taken by *vaidya* in prescribing appropriate type of *Anupana*.

- Diseases of supraclavicular region.
- *Svasha* (Asthma).
- *Kasa* (Cough).
- *Hikka* (Hiccough).
- Diseases of chest.
- Chest injury.
- *Svarabheda* (Hoarseness of voice).
- Singers, orators, scholars.

After taking *Anupana*, one should not walk, speak, read, sing or sleep excessively. Otherwise, it causes *amashaya dushti* and it causes hypersalivation, *angnimandya*, *vamana* etc.

### Concept of anupana in modern medicine<sup>[18]</sup>

The terms which can be taken to understand the concepts of *Anupana* from modern system of medicine are vehicle, adjuvant or synergist and carrier through which the actions like drug absorption, drug companion, drug interaction, drug delivery and bioavailability of the drug will take place.

Bioenhancer is an agent capable of enhancing bioavailability and efficacy of a drug with which it is co-administered, without any pharmacological activity of its own at therapeutic dose used.<sup>[21]</sup>

Vehicles are the substances used for the administration of medicine. They allow the local release of suitable amount of active drug to the target site and also helps for the physical actions like smoothening, lubricating, cooling etc.

Adjuvant is that which assist, especially a drug added to a prescription to hasten or increase the action of a principal ingredient. It is a non-specific stimulator of the immune system.

Synergist is a word synonymous to the adjuvant which means the facilitation of a pharmacological response by the concomitants use of two or more drugs, where the total effect is greater than the sum of their independent action.

A molecule that when combined with another substance is called **carrier**. When it combined with another substance, it can pass through a cell membrane, as occurs in facilitated diffusion or some transport mechanism.

#### **Bioenhancer effect of some herbal drugs**

- Piperine, the major plant alkaloid present in *P. nigrum* Linn (Black pepper) and *P. longum* Linn (Long pepper), has bioavailability enhancing activity for some nutritional substances and for some drugs.<sup>[25]</sup>
- (6)-gingerol is the major pungent principle of ginger. The chemo preventive potentials of (6) -gingerol present a promising future alternative to expensive and toxic therapeutic agents.<sup>[26]</sup>
- Niaziridin is a nitrile glycoside that has been isolated from the leaves, pods, and bark of Drumstick (*Moringa oleifera*). It enhances bioactivity of commonly used antibiotics such as rifampicin, ampicillin, tetracycline, and nalidixic acid against Gram-positive bacteria like *M. smegmatis* and *Bacillus subtilis* and Gram-negative bacteria like *E. coli*.<sup>[27]</sup>
- Glycyrrhizin is a glycoside obtained from roots and stolon of Liquorice (*Glycyrrhiza glabra*). It has expectorant action to treat bronchitis and can also reduce inflammation, allergies, asthma, gastritis, peptic ulcers, rheumatism, and sore throat.<sup>[28]</sup>



- Allicin is an allyl sulfur containing compound obtained from Garlic (*Allium sativum*). Enhancement of the fungicidal activity of amphotericin B (AmB) by allicin, an allyl-sulfur compound from garlic, against the yeast *Saccharomyces cerevisiae* as a model system was studied.<sup>[29]</sup>
- Curcumin is the principal curcuminoid of the popular Indian spice turmeric (*Curcuma longa*). Curcumin suppresses drug metabolizing enzymes (CYP3A4) in the liver [198] as well as inducing changes in the drug transporter P-glycoprotein,<sup>[30]</sup>
- Genistein is an isoflavone found in a number of dietary plants like soybean (*Glycine max*) and kudzu (*Pueraria lobata*) and has been studied for a number of potential health effects including anticancer and anti-inflammatory activity.<sup>[31]</sup>

### Scope for further research

Above active molecule and other drug compounds have not been completely explored in experimental animals till date. However, these studies lack information on their exact mechanism of action, toxicity evaluation of extracts, and suitable combinations. Therefore, we have to focus on this area for further research on their active principles, mechanisms of actions, toxicity evaluation, and suitable combinations with other drugs. So, we can explore novel principles with high bio enhancing ability and less toxic effects.

### CONCLUSION

Concept of *Anupana* is a unique contribution and essential part in administration of *Ahara* as well as *Aushadha*. The *Anupana* when consumed along with food increases digestion and absorption capacity while at the end of intake of food causes *Brumhana*. The potency of the medicine gets enhanced and brings about the desired effect when administered with suitable *Anupana*. *Anupana* is not merely a vehicle for the medicines consumed but also a very important factor which helps in absorption and assimilation of the same. *Anupana* can easily intervene the mode of action of main drug. The limitation of non-feasibility of advocating many classical *Anupanas* can be overcome by logical administration of suitable *Anupana* according to the disease. That means, we can use *Agryoushadhas* also in the form of *Anupana*. Hence the pharmacological actions of Ayurvedic drugs can be made faster when we practice the usage of *Anupana* along with our *Oushadha*.

These natural compounds include piperine, *Zingiber officinale*, niaziridin, glycyrrhizin, *Cuminum cyminum*, allicin, curcumin, genistein. They reduce the dose, shorten treatment, and thus reduce drug-resistance and drug toxicity or adverse reactions. Due to dose economy, treatment is cost-effective. Bioenhancers are also found to decrease or having no effect or little effect on the bioavailability of some drugs. so we can study on other drug compound.

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