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## Concepts of *Yogavahi Dravyas* in Ayurveda: As a Bioenhancer

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### ABSTRACT:

Bioenhancers or Bio potentiators are those agents which do not show any pharmacological action of their own at the therapeutic dose used, instead, they when combined with the active drug, lead to the potentiation of the pharmacological activity of the Drug. “Bioenhancing activity” is considered as a revolutionary concept that is being researched and tested in various modern medicines, but its roots, in general, has been obtained from a classical system of medicine called “Ayurveda”. In Ayurveda, the concepts which promote the mechanism of bio enhancing activity are of :- *Yogavahi*, *Anupana*, *Bhaishajya kala*, *Rasayana*, Various Yoga (Formulations), *Purana Aushadhies*, Penetration enhancers, Action augmenting drugs, *Bhavana*, and Process of *Samshodhana*. In this article, an attempt has been made to explain the concepts and mechanism of *Yogavahi*, and to throw light on the various drugs and processes mentioned in **Ayurveda** with *Yogavahi* property.

**Keywords:** - Bioenhancers, Bioavailability, *Yogavahi*

### INTRODUCTION

**Ayurveda** – “ The science of life<sup>1</sup> ” is mostly based on highly scientific principles, which is being validated and researched. A Bioenhancer is an agent capable of enhancing the bioavailability and efficacy of a drug with which it is co-administered, without any pharmacological activity of its own at the therapeutic dose<sup>2</sup> used . This agent is not the main drug, it is a drug that is being co-administered with the main drug to maximise the overall bioavailability and bio efficiency of the main drug. Here maximizing bioavailability means, increasing the level of drug in the bloodstream available for drug action. Whereas increased bio-efficiency means, increasing the

effectiveness of the drug. A Bioenhancer can act by different mechanisms like promoting the absorption of the drugs from the gastrointestinal tract, inhibiting the rate of biotransformation of drugs in the liver, modifying the immune system in such a way that the overall requirement of the drug is reduced substantially. The concept of Bioenhancer was first time reported in 1929, by the scientist Bose, in his textbook called “Pharmacographia Indica”, where he describes, an increase in the Anti asthmatic effects of *Vasaka* leaves (*Adhatoda vasica*) when it is co-administrated along with long Pepper (**Pippali**). But the term Bioenhancers as a new chapter in medical science was first scientifically established in 1979,



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by Indian scientists Dr C. K. Atal and his research team at RRL Jammu, after they discovered and validated Piperine as the world's first bioenhancer. Since then it has generated global interest and research in this field and has led to the discovery of many other new bio-enhancers. Piperine remains the most potent and extensively researched bioenhancer to date. In Ayurveda, the concepts which promote the mechanism of Bioenhancing activity includes:- the concept of *Yogavahi*, *Anupana*, *Bhaishajya kala*, *Rasayana*, *Various Yoga(Formulations)*, *Purana Aushadhies*, Penetration enhancers, Action augmenting drugs, *Bhavana*, and Process of *samshodhana*. Among this *Yogavahi* concept is dealt in detail here. “*YOGVAHI*”, means that which is capable of acting as a "Carrier" for the macromolecules of active ingredients to transport them to the site of action, besides being a catalyst. *Yogvahi* property can enhance the bioavailability, tissue distribution, and efficacy of drugs, decreases the adverse effects in the process and circumvent Parenteral routes of drug administration. The use of bioenhancer / *Yogvahi dravyas* may lead to synergistic effect (Synergism), which is the most important feature of all Polyherbal formulations in *Ayurveda*. The most common example of *Yogavahitwa* in *Ayurveda* includes *Pippali* (Piper longum), *Maricha* (Piper nigrum). Whereas the other examples include:- *Madhu*, *Ghrta*, *Paradha*, *Bhasmas*, *Guggulu*, *Vata Dosha*, *Ksheerapaka*. Here in this article, all the relevant information relating to *Yogavahitwa* are collected and described .

## MATERIAL AND METHODS

*Yogavahitwa*<sup>3</sup> is the capacity / ability to carry something to a distant place and making it available at the place of its utilisation or A substance which can enhance the property and action of core drug or A catalytic agent that carries the medicinal properties of herbs into the seven *dhatu*s or the tissues of the body or Acts like a vehicle, which carry the required substance to its destiny. The mechanism of bioenhancer also acts in this similar way. Thus the concept of *Yogavahi property*, for enhancing bioavailability, is been used in our Ayurvedic classics dated back [4]. All the required information related to the concept of *Yogavahi dravyas* from both Modern and *Ayurvedic* Literature has been collected from various modern and classical texts respectively along with Google search.

## The most common Ayurvedic Drugs and Concepts, with *Yogavahi* Property are:-

### 1) *Pippali and Maricha* :-

Piperin is an alkaloid compound, found abundantly in *Pippali* (Piper longum) and *Maricha* (Piper nigrum). It is considered to be the first and the foremost intensively used bioenhancer since time immemorial. It has been reported that it enhances the bioavailability of various drugs and nutraceuticals, either by increasing the absorption or by delaying the metabolism of drugs. So many research studies were done till now, showing the vast important usage of Piperin as a bio enhancer for both Allopathic and Ayurvedic medicines<sup>5</sup>. **Table No: 1**

### 2) *Madhu*:-

Honey is a substance which is been widely used in *Ayurveda* classics.

It is *Madhura* in *Rasa* with *Kashaya Anurasa*, easy to digest, hot in potency and balances *kapha* and *pitta dosa*<sup>6</sup>. According to *Acharya Susruta*, honey is considered as *Sreshtha Yogavahi*<sup>7</sup>, the substance which has a quality to penetrate the deepest tissue . Means it is an excellent co-drink for many *Ayurvedic* medicines, thereby acts as a catalyst and helps to deliver the medicines fastly to the target area, without changing its properties. *Acharya Caraka* has also mentioned it as one among the *Pathya dravyas*, which shows how effective honey is for the body. As it is the sourced from multiple types of flowers and various plants, it is a potent and best among all *Yogavahi dravyas*. It is called as “*Param Yogavahi*” because when we administer *madhu* with various formulations, it enhances the medicinal qualities of those preparations and formulations especially while treating *kapha* disorders.

## Some of the Ayurvedic formulations where honey is acting as a catalyst:-

1. *Swasakuttara Rasa*
2. *Anadhabhairavi Rasa*
3. *Vasanthamalathi Rasa*
4. *Hinguleshwara Rasa*
5. *Muktha Pishti*
6. *Talisadhi Choorna*
7. *Sithopaladhi Choorna*
8. *Triphala Choorna*
9. *Trikatu Choorna*
10. *Haridra Choorna*
11. *Balachathurbhadra Choorna*

12. *Abhraka Bhasma*
13. *Vasanthakusumakara rasa*
14. *Sanjivani Vati*
15. *Arogyavardhini vati*
16. *Shanka vati*
17. *Navayasa loha*<sup>8</sup>
18. *Yogendra rasa*

### 3) *Ghrita*

Ghee & **Ayurveda** has a very close relationship since thousand of years. Ghee is considered to be the excellent base for preparing **Ayurvedic** medicines, because ghee has special ability to reach every organs and tissues, within a short period, thereby helps to transport the medicine to the right site. Because of the “**Yogavahi**” action, ghee is considered as a vehicle for many medicine & decoctions. It acts as Bioenhancer in many Ayurvedic formulations. Ghee compared to other cooking oils, decreases enzyme activities which were responsible for activating carcinogens in the liver. Ghee helps to increase carcinogen detoxification and thereby helps to reduce the risk of cancers. Ghee is especially useful for this, because of its inherent **Prabhava** which helps it to assimilate the medicinal properties of other plants without sacrificing its qualities. For example, Ghee can absorb the **amla** properties of another herb without losing its sweet qualities. Ayurveda explains four types of ghee such as ghee of cow, goat, buffalo etc. Out of which cow’s ghee is considered to be best. This has led to ghee becoming one of the most widely-used medicinal carrier substances.

#### Some of the Ayurvedic formulations where *Ghrita* is acting as a catalyst<sup>9</sup>:-

1. *Talisadhi Choorna*
2. *Sitopaladhi Choorna*
3. *Brahmi Ghrita*
4. *Hinguashtakam Choorna*
5. *Navayasa Loha*
6. *Vasa Avaleha*
7. *Kalyanaka Ghrita*
8. *Mahakalyanaka Ghrita*
9. *Saraswatha Ghrita*
10. *Mahapaishachika Ghrita*
11. *Panchagavya Ghrita*

### 4) *Parada*

*Parada* (Mercury) is an auspicious metal, as it is divine in origin. According to the mythology, it is said to be lord Shiva’s *Veerya*. *Parada* is having *Shadrasa*, *Snigdha*,

*Sara*, *Guru guna*, with a special property (*Prabhava*) called “*Yogavahitwa*”<sup>10</sup>. This means *Parada* can heighten the medicinal properties of anything with which it is compounded. This metal is most frequently used in various *Ayurvedic* medicine specially in *Rasayogas*, in the form of *Bhasma*. As per *Rasibhavana* a properly prepared *Bhasma* is readily absorbable, adaptable and assimilable and spreads quickly in the body. *Bhasma* can increase the metabolism and acts as a catalyst. The attributes of *Bhasma* are comparable with the actions of nanoparticles, which can be used to provide selected / targeted delivery of drugs to specific site of action.

All the formulations containing *Parada* exhibits *Yogavahitwa* property, but *Rasa Sindur* is best among all, because in this formulation various indications along with their specific *Anupanas* are told. For example in *Kushta roga*, *Rasa sindur* is said to take along with *Khadhira Kashaya*, to enhance the therapeutic efficiency of *Khadhira kashya*. This happens because of the *Yogavahitwa* ability of *Rasa sindoor*.

#### Some of the *Rasa* preparations which are *Yogavahi* in nature:-

1. *Sutashekara Rasa*
2. *Panchavakta Rasa*
3. *Tarakeshwara Rasa*
4. *Jwaramurari Rasa*
5. *Hingullotha parada*
6. *Rasa Sindur*

### 5) *Guggulu*

*Guggulu* refers to the Oleo-Gum resin obtained by an incision on the bark of *Guggulu* tree ( *Commiphora mukul*). *Guggulu* is called *Yogavahi*, as it can penetrate the minutest parts of the body, thereby it can remove the deep rooted toxins from the bodily tissues. This is an important herb in *Ayurveda* which is taken rarely by itself. There are a large number of *Ayurvedic* formulations known as *Guggulu Kalpanas*, where the *Guggulu* aguments the formulations with the other drugs present in it without losing its potency and, exhibits a huge therapeutic effects. Thus this drug is prescribed in the various disease with different *Anupanas*. These *Guggulu* compounds are prepared using purified *Guggulu* in a synergistic combination with various other suitable herbs. *Acharya Susruta* has mentioned a very good informations related to *Guggulu*<sup>11</sup>

The drug *Guggulu* was preferred to be dispensed internally in the form of liquid, or semi-liquid or semi- solid form. But the solid dosage forms provides more advantage. Later on *Guggulu* was used widely in *Vati* form other than the

remaining internal forms. This happen because of the *Yogavahi* and binding nature of the drug, that increase the efficiency of various formulations.

**Some of the important Guggulu formulations are:-**

<i>Yogaraja Guggulu</i>	– <i>Vata roga</i>
<i>Kaisora Guggulu</i>	- <i>Vata Rakta</i>
<i>Triphala Guggulu</i>	- <i>Vrana, Sthoulya</i>
<i>Kanchanara Guggulu</i>	– <i>Gandamala</i>
<i>Gokshuradi Guggulu</i>	– <i>Prameha</i>
<i>Simhanada Guggulu</i>	– <i>Amavata</i>
<i>Laksha Guggulu</i>	- <i>Bhagna</i>
<i>Saptavimsati Guggulu</i>	- <i>Bhagandhara</i>

**6) Vata Dosha**

As per *Ayurveda* the complete physiology of human body is governed by *Tridoshas*:- *Vata*, *Pitta* and *Kapha*. The state of balance of these *doshas* results in maintenance of health and imbalance of these *doshas* results in various pathologies. And among the *Tridoshas*, *Vata* is of prime important as it is having a very good *Yogavahitwa* property.

*Acharya Sharangadhara* has explained in brief the *Yogavahitwa* concept of *Vata dosha*.<sup>12</sup> He clearly explains that *Pitta*, *Kapha*, *Dhatu*s and *Malas* and everything in the body is lame, they cannot move by themselves unless being motivated by *Vayu*, which is only having the *Chalatwa* property. That is, it acts as a vehicle and transports the normal and abnormal *Pitta* and *Kapha* to different places in the body and also helps to remove the metabolic wastes out of the body. The *Vayu* on association with *Pitta dosha*, will behave like *Pitta* and acquires the qualities of *Pitta dosha* like *Daaha*, *Ushnata*. Also on association with *Kapha* acquires *Sheetadi gunas* and behaves like *Kapha*. Since *Vata* carries the qualities of *Pitta* and *Kapha* it is called to be *Yogavahi*. In addition to this *Vayu* can also push and pull things and elements in body and displace them from one place to another, but this can cause constructive and destructive effects to the body.

The important *Ayurveda* concepts where the *Yogavahitwa* of *Vata dosha* is taken as a prime concern are:-

- *Dosha Prasara*
- *Koshta Gati*
- *Shaka Gati*
- *Ashayapakarsha Gati*

**7) Ksheera Paka**

*Ksheera Paka* is a type of Pharmaceutical preparation,

where cow’s milk is used as the basic ingredient or medium, because milk might enhance the attributes of the drugs added into it. Means milk being a colloidal solution, is an excellent media, which can retains the useful attributes of the drugs added to it. Because of the presence of both polar and non polar solvent, that is water and lipid, all the active constituents according to the polarity gets extracted in milk. The main objective of this *Kalpna* is that, it can reduce the *Teekshnata* of the drugs added to it, at the same time it can provide the same therapeutic effects due to the *Samskarita* with *Ksheera*, thereby highly useful in those conditions where milk products cannot be prescribed directly.

By increasing the temperature of milk, the solubility of fat and protein also gets increased, which enhances the extraction of medicinally important active constituents and can be easily absorbed through the body membrane.

**Some of the Ksheera Paka preparations used are:-**

1. *Rasona Ksheera Paka*
2. *Shunti Ksheera Paka*
3. *Arjuna Ksheera Paka*
4. *Guduchi Ksheera Paka*
5. *Pippali Ksheera Paka*
6. *Haridra Ksheera Paka*

**RESULTS**

The ultimate aim for the usage of herbal drugs with *Yogavahi* property is to maximize the bioavailability, because the extent of bioavailability directly influences plasma concentrations which inturn increases the therapeutic efficacy. Also the enhancement of bioavailability can make the expensive drugs affordable and reduces the toxic effects by reducing the required dose of drugs. The concepts of *Yogavahitwa* property in the above described drugs and Processes such as:- *Pippali*(*Piper longum*), *Maricha*(*Piper nigrum*) *Madhu*, *Ghrita*., *Paradha*, *Bhasmas*, *Guggulu*, *Vata Dosha*, *Ksheerapaka*, made its involvement in *Ayurvedic Pharmaceuticals*, there by achieving advanced formulations under various categories like *Kashaya*, *Vati*, *Asava*, *Arishta*, *Avaleha*, *Paka*, *Khand*, *Bhasma*, *Pishti* etc.

**DISCUSSION**

Bioenhancers are of very much useful in the field of medicine, as they lead to reduction in cost, toxicity and other adverse effects. They are safe, effective, economical and has a widely based effect on several classes of drugs. Various scientific research have shown a significant

enhancing effect on the bioavailability of bioenhancers, when co-administered with main drugs.

A scientific breakthrough regarding bioenhancers occurred after the development and isolation of molecules such as piperin and quercetin. Many researches had developed showing the improvement of bioavailability of a large number of drugs with the addition of various herbs with bioenhancing activity. The concept of Bioenhancer is called as *Yogavahi* in Ayurveda. *Yogavahitwa* is the ability to carry some other things to distant places and making it available at the place of its utilization. The above mentioned *Ayurvedic* bioenhancer has played an immense role for enhancing the bioavailability of the main drugs, as decreased bioavailability has become a major problem for all the *Ayurvedic* drugs and formulations when compared to modern form of drugs which are having 100% bioavailability.

## CONCLUSION

Bioenhancing activity is an innovative concept, whose discovery was based on traditional system of medicine, that is, *Ayurveda*. Many of the economically viable drug combinations were invented by integrating natural knowledge of *Ayurveda* with the modern methods of research. *Ayurveda* is a science with immense number of Polyherbal drug combinations, whose therapeutic efficacy is as a result of synergistic effect (Synergism). The end effect of this, is due to the bioenhancing ability exhibited by the drugs in these Polyherbal formulations. Other than *Yogavahi*, other factors which can enhance the bioavailability includes: *Anupana*, *Bhaishajya kala*, *Rasayana*, *Purana Aushadhies*, *Penetrating enhancers*, *process of Samshodhana*, *Bhavana*.

Some of the common examples of *Yogavahitwa drugs* in *Ayurveda* includes *Pippali*(Piper longum), *Maricha*(Piper nigrum). Whereas the others are :- *Madhu*, *Ghrita*, *Paradha*, *Bhasmas*, *Guggulu*, *Vata Dosha*, *Ksheerapaka*. All the relevant informations relating to *Yogavahitwa* ability of these drugs, shows, how the traditional wisdom of these *Ayurvedic* drugs shows its bioenhancing activities.

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Table No: 1 :- Bioenhancer

AURVEDIC	ALLOPATHIC
1. <i>Chyavanprasha</i>	1. Vasicine
2. <i>Kumaryasava</i>	2. Spatene
3. <i>Rohitakarishtha</i>	3. Rifampicin
4. <i>Vasakasava</i>	4. Phenytoin
5. <i>Vasavaleha</i>	5. Dapsone
6. <i>Kushmanda Rasayana</i>	6. Ciprofloxacin
7. <i>Srikhandaasava</i>	7. Proponolol
8. <i>Chitraka Haritaki</i>	8. Cyclosporine A
9. <i>Aswagandhi Lehya</i>	9. Oxyphenylbutazone
10. <i>Danti Haritaki</i>	10. Phenytoin
11. <i>Dasamula Haritaki</i>	11. Aflatoxin
12. <i>Draksha Avaleha</i>	12. Beta-carotene
13. <i>Mustaka Arishta</i>	13. Theophylline
14. <i>Satavari guda</i>	14. Ciprofloxacin
15. <i>Panchasava</i>	15. Cefotaxime
	16. Metronidazole

