Original Article

A Review Article On Concept Of Vipaka W.S.R. To Pharmacokinetics

Agrawal Akhil Kumar[1], Tandon Sunil Kumar[2], Shukla Sonal[3], Agrawal Medha[4], Swami Devika[5], Agrawal Nikita[6]

1. Assistant Proffessor, Department of Dravyaguna, Mahaveer College of Ayurvedic Science, Sundra, Rajnandgaon, (C.G.)
2. Assistant Professor, Department of Rachana Sharir, Chhattisgarh Ayurved Medical College, Manki, Rajnandgaon (C.G.)
3. M.D, Rognidan avum Vikriti Vigyan, Ayurvedic Practitioner, Raipur, (C.G.)
4. Assistant Proffessor, Department of Rognidan avum Vikriti Vigyan, Mahaveer College of Ayurvedic Science, Sundra, Rajnandgaon, (C.G.)
5. PG Scholar, Department of Swasthvritta, Govt. Ayurvedic College, Raipur (C.G.)
6. PG Scholar, Department of Rognidan avum Vikriti Vigyan, Govt. Ayurvedic College, Raipur (C.G.)

Correspondence address**:** Dr Akhil Kumar Agrawal, Assistant Proffessor, Department of Dravyaguna, Mahaveer College of Ayurvedic Science, Sundra, Rajnandgaon, Chhattisgarh. 491441
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Abstract

In Ayurvedic pharmacology, the dravya works on their rasa, guna, vipaka, prabhava. Here vipaka means the final outcome after the jathargni vyapar. Agni is important to transform the dravya (Aahar & Aushadh), it convert to food in to energy and responsible for the vital fuction of the body. Here we understand the concept of agni. Vipaka is determine by the anuman and karma on the body. The term "Pharmacokinetics" denotes to "What body does to the drug", four steps of pharmacokinetics are absorption, distribution, metabolism, excretion. Pharmacokinetics and pharmaco-dynamics of herbal drugs are difficult to explain in the terms of modern pharmacology. in modern era advancement in technology tools. New drug delivery system is open the door for inhance the bioavailability of herbal drugs. This review article is focus on the concept of vipaka and relation between the modern pharmacokinetics .

Keywords:- Ayurveda, Dravyaguna,Vipaka,Jatharagni,Pharmacokinetics.

Introduction:-

Ayurveda is the science of life. The main aim of ayurved is "prayojanam chasya swasthasya swasthaya rakshanam aaturasch vikaraprashamanm cha"[1]. Mool of arogya is bassed on samyak agni.

Vipaka:-

According to Acharya Vagbhat **Jathrenagnina yogatyatudeti rasantaram rasanam parinamante sah vipaka iti smritah[2]**

Means when we intake a food which is rasa pradhana(rasa pradhana aahara),it digest by the agni (jathar agni) the final resultant we found is called Vipaka, which is differ from rasa dhatu. It is only a literary meaning but the same definition covers a very vast area of the human body Physiology. Dhatawagni specially rasadhatwagni acts on Vipaka and form Rasa Dhatu.

AGNI:-

Agni is moola of life(moolamagni tasmat niruchyate)[3].Function of agni is to transform the one substact to another substarct and liberate to energy.in ayurveda 13 types of agni is described:-

Jatharagni
Bhootagni
Dhatwagni

Ayurveda considers that Dehagni is the cause of life, complexion, strength, health, nourishment, lusture, oja, teja (energy) and prana (life energy). Agni is responsible for digestion and metabolism. All 13 types of agni is key factor for transform the consumed aahar of vijatiya into sajatiya dravya.

Jathargni paka:-

Jatharagni paka is described as avasthapaka. Avasthapak is transformation of food into amashaya,pachyamanashya,& pakwashaya, there is two phase of digestion Prapaka and Vipaka Prapaka has Three types:-

Madhura avasthapak
Amla avasthapak
Katuavastha paka

Three types of **Vipaka**:-According to **Acharya Charak**

Madhura Vipaka
Amla Vipaka
Katu Vipaka

According to **Acharya Susrut** two type of **Vipaka**[4]:-
Madhura Vipaka (pritvi+jal mahabhut pradhan)
Katu vipaka(agni + vayu+ aakash mahabhoot prdhan)
Madhur vipaka also called guru Vipaka and katu Vipaka called laghu Vipaka.

Role of Vipaka:-

According to **Acharya Chakrapani**,dravya are two types- **Aahara dravya** and **Aushadhi dravya** . Aahara dravyas are mainly Rasapradhana. Here jatharagni and dhatwagni works. Aahara dravya provide the building materials for body to form healthy dhatu. Aushadhi drvya are mainly viryapradhana. Virya denotes the power or energy.it also denote the guna of drvya. Here the main action of bhootagni. After the jathargni paka the substract form is vipaka which is transformable material for rasa dhatu[5].

Determination of Vipaka:-

According to **Acharya Charak, "Vipaka karmanishthya**[6]" the assessment of Vipaka by the anuman. Thus it can be said that the **Vipaka** can be assessed by its (action performing) karma on body.

Pharmacokinetics:-

The term "Pharmacokinetics" denotes to "What body does to the drug"? Pharmacokinetics, sometimes abbreviated as PK, (from Ancient Greek pharmakon "drug" and kinetikos "to do with motion"; see chemical kinetics) is a branch of pharmacology dedicated to the determination of the fate of substances administered externally to a living organism. 4 steps of pharmacokinetics[7]:-

Absorption - the process of a substance entering the blood circulation.

Distribution - the dispersion or dissemination of substances throughout the fluids and tissues of the body.

Metabolization (or biotransformation or inactivation) – the recognition by the organism that a foreign substance is present and the irreversible transformation of parent compounds into daughter metabolites. **Excretion** - the removal of the substances from the body. In rare cases, some drugs irreversibly accumulate in body tissue.

An Ayurveda View on Pharmacokinetics:-

The pharmacological , toxicological & clinical action „Karma" of a drug are attributed to 5 qualities of a drug broadly classified as rasa , guna ,veerya ,vipaka) & prabhava After intake of aahara dravya (Diet or drug) due to the action of agni, it alters in rupa and rasa; after metabolized of aahar dravya,there is sara-kitta vibhajana. Sara bhaga of bhukta dravya goes to hrudaya; there from circulates in all over body with the help of vyan vayu. Then this sara bhaga resides in all dhatus and get metabolized by the respective dhatwagni. This aadyarasa and rasadhatu combine causes vruddhi (gr and kshaya of a particular body tissue (dhatu) due to dhatuguna saamya and vishesha during the **Dhatvagni- paka**.[8] The pharmacokinetic and pharmacodynamics action of ayurvedic drugs not explain in modern parameters,where allopathic medicines or chemicals act on receptors and the effect on their response, while according to ayurveda aushadhi works on the basis of rasa,guna,vipaka,virya prabhava. Digestion of dravya in three level or three tupes of agni digest the dravya- jatharagni, dhatwagni , bhootagni. After the digestion, dravya divided in two parts-Sara bhag and Kitta Bhaga. Sara bhaga helps in forming the progressively healthy dhatu and kitta bhag like sweda , mutra ,purisha excreted.

Bioavailability of drugs

Bio-availability of a drug (availability of biologically active drug) is defined as the amount or percentage of drug that is absorbed from a given dosage forms and reaches the systemic circulation following non-vascular administration. When the drug is given I.V., the bio-availability is 100%.[21] This may not be so after oral administration. Acharyas of Ayurveda preached and practiced the oral route of administration for majority of drugs. „Anupana" (substance administered either with the drug or after its administration) facilitates for better absorption of the drug and helps in achieving higher percentage of bio-availability of the drug.

1. Drugs are metabolised by the enzymes.
2. Drugs could change spontaneously into other substance without intervention of enzymes.
3. Drug could be excreted unchanged.

Nowadays with the advancement in the technology, novel drug delivery systems open the door towards the development of enhancing bioavailability of herbal drug delivery systems. For last one decade many novel carriers such as liposomes, microspheres, nanoparticles, transferosomes, ethosomes, lipid based systems etc. have been reported for successful modified delivery of various herbal drugs.

In ayurveda the concept of bio-inhancer present in centuries year ago,as a yogvahi as example-trikatu,where pippali act as yogvahi. Lots of dravya ghrt, madhu are described in ayurveda which inhance the bio-availability of dravya.[9]

Vipaka and Mechanisms of Action of Herbal Bioenhancers

There are several mechanisms of action by which herbal bioenhancers act. Different herbal bioenhancers may have same or different mechanism of action. Nutritional bioenhancers enhance absorption by acting on gastrointestinal tract. Antimicrobial bioenhancers mostly act on drug metabolism process. Among the various mechanisms of action postulated for herbal bioenhancers some are as follows

(a) Reduction in hydrochloric acid secretion and increase in gastrointestinal blood supply[10]

(b) Inhibition of gastrointestinal transit, gastric emptying time and intestinal motility.[11]

(c) Modifications in GIT epithelial cell membrane permeability.[12]

(d) Cholagogous effect[13]

(e) Bioenergetics and thermogenic properties[14]

(f) Suppression of first pass metabolism and inhibition of drug metabolizing enzymes.[15](a,b,c) and stimulation of gamma glutamyl transpeptidase (GGT) activity which enhances uptake of amino acids.

Conclusion:-

So the concept of vipaka is broadly cover in ayurveda and it can't be explain only in metabolic action. All types of agni work on to digest the dravya to liberate the molecules of substance and it also change the chemical structure of dravya. So firstly understand the concept of agni. Digested dravya work on cellular and tissue level. Thus the need is to understand the pharmacokinetic of herbal medicine in ayurvedic concept of Vipaka.

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