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A CLASSICAL REVIEW ON PRATINIDHI DRAVYA (SUBSTITUTE DRUG)

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ABSTRACT

Pratinidhi Dravyas are substitute drugs utilize for the drugs which are not available. It mainly deals with rational substitution intentionally selected of crude drugs required for medicinal purpose. This concept is referred from one of the Laghutrayi, Bhavapraksh written in 16th century A.D. As the list of substitute is first of its kind and this Nighantu is considered as latest among classical work in Dravyaguna Shastra**.** The concept of Pratinidhi dravya(substitute drug) is a need of pharmaceutical industry. Pratinidhi dravya is substitute drug in absence of an original drug. Many (pratinidhi Dravyas) are mention in texts, which are involved many aspect. In Bhavprakash list of pratinidhi dravya is given in Mishraka varga prakarana but in Yogratnakar pratinidhi dravya mentioned separately. The principles to selected pratinidhi Dravya based on similarity of Rasa(Taste), Guna(Property), Virya (Potency) Vipaka most important factor is karma (action). Pratinidhi drug serves to overcome the problem of un-availability of drug due to scarcity, rare or difficult to procure. The purpose of this study is to understand the fundamental Ayurvedic principles behind pratinidhi dravya identification, so that one can proactively apply these in the future discovery of new medicinal plants and therapeutic functions. To study the relationship between a selected list of the original drug and pritinidhi dravya based on Ayurvedic principles and traditional practices Awareness on the use of pratinidhi dravya: To enhance the awareness on possibility of use of pratinidhi dravya concept among Ayurvedic and traditional practitioners. This in way to help to produce good quality herbal product and lend a support in conservation and sustainability of medicinal plants. The Pharmacopeial or extra Pharmacopeial drug should be assessed on the basic fundamentals of as well as resemblance, regional Dravyguna Ayurvedic material medica Rasa, Virya, Vipaka substitution on the basis of synonym, pharmacological and

clinical trials. This will enrich the current practices of Pratinidhi Dravyas (SubstituteDrugs) in Ayurvedic science.

KEYWORDS: Pratinidhi dravya, substitute.

INTRODUCTION

Pratinidhi Dravya is an unique concept about uses of substitute drug in the absence of original drug. In Ayurveda definition of pratinidhi dravya as Pratinidhi means representation, substitute, vicegerent. This concept has been mentioned by Bhavmishra (16^{th} century A.D.) it is evident that inclusion of number of medicinal plants in Ayurveda classics from Vedic period to Nighantu period has been increased.

In view of the phenomenal increase in demand of herbal drugs, the concerned medicinal plants have been indiscriminately over exploited leading to scarcity or endangerment of many valuable plant species. In India more than 90% plant species used by industry are collected from wild and over 60% of the collection involve destructive harvesting. According to an estimate over half a million tones of the raw materials are indiscriminately collected from wild, mostly following destructive harvesting procedure and thus about 165,700 hectares forest being clear field each year. Hence alarming situations have resulted into short supply, high prices, forced import, or substitution and adulteration of crude drugs. In ancient time the drugs were supplied by the government of the state as far as time is concerned after the 10th century, it is difficult to get pure drugs from ministry and it was need of the time, had to collect the drug by own self. The drugs Vaidya which were less available in local area were replaced by the another drugs known as (Substitute) and Pratinidhi Dravyas put in the practice because of easy availability and comparative cost effective. In terms of pharmacy, substitute is generally done when original drugs are not available or maybe available in small quantity.

The prior like and have not given Acharyas Charaka Sushruta direct reference or listing of (Substitute) Pratinidhi Dravyas but, have stated that in case of Acharya Vagbhata availability of any particular drug in the preparation of a compound one should try to get another similarly potent drug having similar Rasa(Test), Guna(Property), Virya(Potency) and Detail description regarding Vipaka. Pratinidhi Dravyas (Substitute) can be traced from the text books like Bhavaprakasha Bhavmishra (in 16th century), Yogaratnakara (in 17th century) and Bhaishajya ratnavali (in 14th century) mentioned.

MATERIALS AND METHODS

Available Ayurvedic Liturature (bhavprakash, yogratnakar and bhaishjyaratnavali) were studied for better understanding of concept of pratinidhi dravyas (Substitutes drugs). Information regarding pratinidhi drugs from various jouranals, Ayurvedic texts and also Internet media was also used for availability and necessity for comprehensive understanding of the subject. A detail is of classical drugs and their pratinidhi dravyas(Substitutes drugs) with their botanical names was prepared, which was critically studied and divided under various subclasses with possible logic involved with them.

The list of some Pratinidhi dravya are mentioned in Bhavprakash are below.

Sr.no.	Mukhya drug (Original drug)	Pratinidhi dravya (Substitute drug)
1	Lakshamana (*Ipomea sepearia*)	Mayurshikha(*Actinopteris dichotoma)*
2	Madhu(Honey)	Purana gud(old jiggery)
3	Madhuyashti(*Glycyrrhiza glabra*)	Dhataki pushpa (*Woodfordia friticosa* flower)
4	Meda, Mahameda (*Polygonatum cirrhifolium*)	Shatavari(*Asparagus racemosus*)
5	Munukka	Gambhariphala(Gmelina arborea flower)
6	Murva(*Marsdenia tenacissima*)	Jinginai tawak(*Odina woodier* bark)
7	Nagakeshara (*Mesua ferra* stigma)	Padmakeshara(stigma of *Nelumbium speciosum*)
8	Nilakamala(*Nehumbium speciasum*)	Kumudini(Nymphaea alba)
9	Pushkara moola(*Inmula recemosa*)	Kushta(*Saussurea lappa*)
10	Rakta chandana	Karpura(*Cinnamomum camphora*)
11	Tagar (*Valeriana wallichii*)	Kushta(*Saussurea lappa*)

The list of some Pratinidhi dravya are mentioned in Yogaratnakara are below.

Sr.no.	Mukhya dravya(Original drug)	Pratinidhi dravya(substitute drug)
1	Kusha (*Desmostachya bipinata*)	Kasha(*Saccharum spontaneum*)
2	Madhu (Honey)	Purana gud(old jaggery)
3	Madhuyashti(*Glycyrrhiza glabra*)	Dhataki pushpa(*Woodfordia friticosa* flower)
4	Meda, Mahameda (*Polygonatum cirrhifolium*)	Shatavari(*Asparagus racemosus*)
5	Murva(*Marsdenia tenacissima*)	Jinginai tawak(*Odina woodier* bark)
6	Nagakeshara (*Mesua ferra* stigma)	Padmakeshara(stigma of *Nelumbium speciosum*)
7	Mustaka(*Cyperus rotendus*)	Haritaki(*Terminalia chebula*)
8	Nakha(*Achatina fulica*)	Lavanga Kusuma(*Syzygium aromaticum*)
9	Nirgundi(*Vitex negundo*)	Tulasi(*Ocimum sanctum*)
10	Punarnava(*Boerhavia diffusa*)	Rakta punarnava (*Trianthema portulacastrum*)
11	Pushkara moola(*Inmula recemosa*)	Kushta(*Saussurea lappa*)
12	Rasna(*Pluchea lanceolata*)	Kulinjara(*Alpiniaq galangal*)
13	Rakta chandana	Karpura(Cinnamomum camphora)
14	Shweta chandana(*Santalum albaum*	Karpura(*Cinnamomum camphora*)
15	Tagar (*Valeriana wallichii*)	Kushta(*Saussurea lappa*)
16	Tulasi (*Ocimum sanctum*)	Nirgundi(*Vitex nirgundo*)

The list of some Pratinidhi dravya are mentioned in Bhaishjyaratnavali as below.

Sr.no.	Mukhya dravya(Original drug)	Pratinidhi dravya(Substitute drug)
1	Kustumbaru(Nepali dhaniya)	Dhanyaka(Indian dhaniya)
2	Kutaja (*Holarrhena antidysenterica)*	Maushlika moola(root of *Asperagus adscendens*)
3	Lakshamana(*-Ipomea sepearia*)	Mayurshikha (*Actinopteris dichotoma*)
4	Langali (*Gloriasa superb*)	Kushta(*Saussurea lappa*)
5	Madhu (honey)	Puarana gud(old jaggery)
6	Madhuyashti(*Glycyrrhiza glabra*)	Dhataki pushpa (*Woodfordia friticosa* flower)
7	Meda (*Polygonatum cirrhifolium*)	Ashwagandha (*Withania somnifera*)
8	Mahameda (*Polygonatum cirrhifolium*)	Anantmoola(roots of *Hemidesmus indicus*)
9	Murva(*Marsdenia tenacissima*)	Jinginai tawak(*Odina woodier* bark)
10	Nagakeshara (*Masua ferra*)	Kamala keshara(*Mymphea alba*)
11	Nakha(*Achatina fulica*)	Lavanga Kusuma (*Syzygium aromaticum*)
12	Prishniparni (*Uraria picta*)	Haridra(*Curcuma longa*)
13	Puarana guda(Old jiggery)	Nava guda (New jaggery)
14	Pushkara moola(*Inmula recemosa*)	Kushta(*Saussurea lappa*)
15	Rasna(*Pluchea lanceolata*)	Vendaka (*Vanda roxburghi*)
16	Shweta chandana(*Santalum albaum)*	Karpura(*Cinnamomum camphora*)

Comparative chart of Pratinidhi daravya mentioned in Bhavprakash, Yogratnakar and Bhaishjyaratnavali.

Sr.no.	Mukhya dravya (original drug)	Pratinidhi dravya (Bhavprakash)	Pratindhi dravya (Yogaratnakar)	Pratinidhi dravya (Bhaishjyaratnavali)
1	Kusha (Desmostachya bipinata)	----------	Kasha (Saccharum spontaneum)	
2	Kustumbaru(Nepali dhaniya	----------	----------	Dhanyaka (Indian dhaniya
3	Kutaja(Holarrhena antidysenterica)	----------	--------	Maushlika moola (root of Asperagus adscendens
4	Lakshmana(Ipomea seperia)	Mayurshikha (Actinopteris dichotoma)	---------	Mayurshikha (Actinopteris dichotoma
5	Langali (Gloriosa nsuperb)	----------	---------	Kushta (Saussurea lappa)
6	Madhu (Honey)	Purana gud(old jiggery)	Purana gud(old jiggery)	Puarana gud(old jaggery)
7	Madhuyashti(L.N.-Glycyrrhiza glabra)	Dhatakipushpa (Woodfordia friticosa)	Dhataki pushpa (Woodfordia friticosa)	Dhataki pushpa (*Woodfordia friticosa* flower)
8	Meda (polygonatum cirrhifolium)	----------	---------	Ashwagandha (*Withania somnifera*)

9	Mahameda (Polygonatum cirrhifolium)	----------	--------	Anantmoola (roots of *Hemidesmus indicus*)
10	Meda,mahameda(Polygonatum cirrhifolium)	Shatavari (Asparagus racemosus)	Shatavari (Asparagus racemosus)	
11	Munnuka(Vitus senifera)	Gambhariphala(L.N.-Gmelina arborea flower)	---------	
12	Murva (Marsdenia tenacissima)	Jinginai tawak(odina woodier bark)	Jinginai tawak (Odina woodier bark)	Jinginai tawak(Odina woodier bark)
13	Mustaka (Cyperus rotendus)	----------	Haritaki (terminalia chebula)	
14	Nagkeshara (Mesua ferra)	Padmakeshara(stigma of Nelumbium speciosum)	----------	Kamala keshara(*Mymphea alba*)
15	Nakha(L.N.-Achatina fulica)	----------	Lavanga kusuma (Syzygium aromaticum)	Lavanga Kusuma (*Syzygium aromaticum*)
16	Nilkamala (Nelumbium speciosum)	Kumudini (Nymphaea alba)	----------	
17	Nirgundi) vitex nirgbundo	----------	---------	
18	Prishniparni (L.N.-Uraria picta)	----------	---------	Haridra (*Curcuma longa*)
19	Punarnava (Boerhavia diffusa)	----------	Rakta punarnava (Trianthema portulacastrum)	Nava guda (New jaggery)
20	Puarana guda(Old jiggery)	----------	----------	Kushta (*Saussurea lappa*)
21	Pushkara moola(Inmula recemosa)	Kushta (Saussurea lappa)	Kusahta (Saussurea lappa)	Vendaka (*Vanda roxburghi*)
22	Rasna(L.N.-Pluchea lanceolata)	----------	Kulinjara (Alpinia galangal)	
23	Rakta chandana	Karpura (Cinnamomum camphora)	---------	
24	Shweta chandana(Santalum albaum	----------	Karpura (Cinnamomum camphora)	Karpura (Cinnamomum camphora)
25	Tagar (L.N.-Valeriana wallichii)	Kushta (Saussurea lappa)	Kushta (Saussurea lappa)	
26	Tulasi (Ocimum sanctum)	----------	Nirgundi-(Vitex nirgundo)	

DISCUSSION

Acharya Bhavaprakash while explained the pratinidhi dravyas have mentioned that among the things enumerated so far and some others not mentioned here. if any one is not available then any other drug which is similar to it in Rasa –Veerya- Vipaka, should be selected by the physician and made use of (Substitute). More than 60 described Pratinidhi dravyas in Bhavprakash. Morethan 70 described Pratinidhi dravyas in Yogaratnakara, and about 75 described Pratinidhi dravyas Bhaishajya ratnavali. In this list of, they are gradually increasing Pratinidhi dravyas in number. In the text, it is clearly stated Bhaishajyaratnavali that the main drug in any formulation cannot be substituted, only the excessary drugs in the formulation can be substituted by appropriate Pratinidhi dravyas.

In recent era, mainly two factors are responsible for adulteration i.e.availability and price. When availability of the drug is less and demand is more, it leads to adulteration. As the health is first and for tissue to be prioritized and that to affordable cost, but when the cost of drug is high, again leads to adulteration.The other factors involved for selection of pratinidhi dravyas (Substitutes drugs), which are mention in Ayurvedic texts and then find out most appropriate drugs in case of none availabity of genune drugs. Some major factor regarding to pratinidhi dravya are discuss here.

Factors- to be considered for selection of Pratinidhi dravya

1) Uncertain identity
2) Regional substitutes
3) Non-availability of the drug
4) Seasonal availability of the part
5) Shelf life of the drug
6) Cost of the drug
7) Geographical distribution of the drug

1) Uncertain identity- in Ayurvedic classics, certain drug were unidentified, for these drugs the nearest matching characteristic, i.e. nam(nomenclature), roopa(morphological and other organoleptic characters), and karama(action of the drug) were taken into consideration.

Examples: Meda, Mahameda- Shatavari (*Asparagus recemosus).*

Kakoli, Kshirkakoli - Ashwagandha(*Withania somnifera)*

2) Regional substitutes-under one various drugs were used in various regions as there are changes in vernacular as, misidentification or adulteration practices and specific drug action on the available source may be the cause of introduction of regional substitutes
Examples: Rasna – *Alpinia galgana* wild
Vanda roxburghii R.br.

3) Non-availability of the drug- in case of then non-availability of the drug e.g. Talispatra (*Abies webiana*)- leaf of the taxus baccata are used.

4) Seasonal availability of the part- certain part of drugs are available seasonally in these cases, other drug can be introduced, which is having the same action.
e.g. Rakta punarnava (*Boerhaavia diffusa* linn.) can be substitute for Shweta punaranava (*Trianthema portulacastrum*)

5) Shelf life of the drug- dravya like Ativisha (Aconitum heterophyllum wall.) which get infected easily by cankers, thus may be substitute by drug like Musta (*Cyperus rotendus* linn).

6) Cost of the drug- Rasna moola (*Pluchea lanceolate*) value in the market is near about 700 Rs per kg instead of that pharmacies are using leaf of Rasna.
Kumkuma (*Corcus sativus* linn.) being costly herb is substituted by Kusumbha (*Carthamustinctorus* linn.)

7) Geographical distribution of the drug- through India is one among the richest bio-diversity all over the world, geographically variations are always there some plants like Vastanabha(Aconitum ferox wall), are available in Himalaya.

Criteria for substitution drugs

1) Rasapanchaka
2) Consideration of the species
3) Drug of the same family

1) Rasapanchaka: according to it, if a drug posseses the same Characteristic based on rasa, guna, virya, vipaka, and prabhav with that of another drug then other drug is qualified as substituted drug.

2) **Consideration of the species:** if due to some reasons the particular species of genus is not available, then some other species can replaces the drug. E.g. pinus nigra can be substitute for pinus roxburghii
3) **Drugs of the same family:** on several occasions, drugs belonging to the samew family are reversibely taken. E.g. berberis aristata and berberis lysium could be substitute for each other where needed.

CONCLUSION

1. Ayurvedic concept based pratinidhi dravya differ the views of current botanical and pharmacy concept. The drugs should be assessed on the basis of their (Property and Gunakarma action) and further they should be evaluated.
2. Regional substitution is need of hour on the basis of synonym, and its local usage. On the basis of tools Ayurvedic and current scientific base may be assessment and find out proper. Same action like as main drugs is Pratinidhi davyas most important regarding find out suitable Pratinidhi Dravyas (Substitute).
3. Substitute and adulteration are different. Substitute is rational replacement of herbal drugs to get similar medicinal properties from replaced material, so substitute and Adulteration can be understood in two ways: first (official substitutes) and secondly (commercial aspect) The first substitute of the drug is scientifically proved. It means that the drug has the properties which are similar to the original one.
4. Secondly means the drug has been using instead of the original one is not scientifically proved but it is commercially beneficial to the adulterator or drug dealer.

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