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Review Article

ANALYZING THE DRUG SAFETY ISSUE IN BHAVAPRAKASHA NIGHANTU – A CRITICAL REVIEW

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Abstract

Practice of pharmacovigilance in Ayurveda, the oldest medical science in the world, is as old as the science itself. Pharmacovigilance plays an important role in optimizing drug safety and improving treatment outcomes. It describes the possible side effects that can occur with different therapeutically useful drugs. Further, it also describes ways to minimize these side effects. Bhavaprakasha Nighantu, considered as one of the frequently referred classical texts of Ayurveda, delineates pharmacovigilance aspects of many herbal drugs. The present review reports the cautions, contraindications and possible side effects caused by inappropriate administration of drugs. Out of total 23 Vargas (classified group), eight Vargas that is Haritakyadi to Shaka Varga except Dhatvadi (metallic) Varga were reviewed. Haritakyadi, Karpuradi, Guduchyadi, Pushpadi, Vatadi, Phala, Dhanya and Shaka Varga comprises near about 480 drugs of herbal origin and were reviewed critically with regards to provocation of Dosha, Dhatu, Mala and other possible side effects. About 196 drugs have been found to be reported about their possible side effects, if not administered judiciously. Hence, a person who is well versed with Ayurveda fundamental principles should advice the use of these drugs taking all these factors into consideration.

Key words: Pharmacovigilance; Drug safety; Ayurveda; Bhavprakasha Nighantu.

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INTRODUCTION

Pharmacovigilance is a science related to the detection, assessment, understanding and prevention of adverse effects or any other drug related problems. One of its aims is for early detection of hitherto unknown adverse reactions and detection of increase in frequency of (known) adverse reactions. [1] It plays an important role in optimizing drug safety and improving treatment outcomes. Practice of Pharmacovigilance is the need of hour for all systems of medicine including Indian systems of medicine like Ayurveda, as it helps to prove these systems of medicines safe and prove to be more scientific and up to date in modern terms.[2] Although a technical term equivalent to "pharmacovigilance" does not feature in Ayurvedic texts, the spirit of pharmacovigilance is vibrant throughout Ayurvedic classical literature. Ayurveda always accentuate on safe treatment which includes alleviates the disease by not instigating another diseases.[3] It has been advised to analyze the Dosha (individual humours), Prakruti (individual constitution), Kala (time), Vaya (age), Agni (digestive capacity) etc. before prescribing the drug.[4] To ensure the safety of patients various modalities in drug have been suggested throughout the classical texts by Shodhana (purification techniques) etc.[5] It has been advised to administer drugs with cautions and restrictions.[6] It is a common notion that natural is safe and Ayurvedic/herbal medicine being natural in origin has lesser side effects. But it is clearly mentioned that Ayurvedic drugs, if improperly used can be toxic. "A potent poison also becomes the best drug on proper administration. On the contrary, even the best drug becomes a potent poison if used badly". [7] Different possible causes of Adverse Drug Reactions (ADR) in Ayurveda have been postulated. [8] A rich textual knowledge is necessary while practicing to minimize the possible adverse reactions.

Ayurvedic pharmacology describes the possible side effects that can occur with different therapeutically useful drugs. Further, it also describes ways, including manufacturing techniques, to minimize these side effects. Ayurveda gives instructions regarding time of drug administration,[9] the relationship with food and drug,[10] types of food to be either to be consumed or not consumed with the drug, and other do's and don'ts during the treatment procedure.

Herbal or Herbo-mineral preparations are the tools of Ayurvedic remedies. While prescribing these drugs one should be well known about its properties, Rasadipanchaka (pharmacodynamics), parts used, dose, indications, contraindications and Anupana (vehicle) etc. But now days, these aspects of treatment modalities are the most neglected areas. Keeping drugs as main line of treatment Aahara Kalpana (dietary regimen), Pathya Kalpana (beneficial dietary or behavioral regimen) are also elaborated in detailed in Ayurveda in Bruhatrayi, Laghutraies and Nighantus. Ayurveda considers treatment as partial if Pathya/Ahara-Vihara Kalpana has not been followed, which has been thoroughly explained in above texts.[11] Generally the physicians follow the indications very perfectly but at the same time forget to practice the contraindications, which are rather more important part. Nighantu (lexicons) like Dhanwantari Nighantu, [12] Madanapala Nighantu,[13] Raja Nighantu,[14] Kaiyadeva Nighantu,[15] etc. have entailed a vivid description of pharmacotherapeutic properties of individual drugs which is lacking in Samhitas. A critical review on contribution of Dhanwantari Nighantu towards drug safety has been reported. [16] In this review, an attempt has been made to compile, access and analyze the cautions, contraindications and possible adverse effects caused by inappropriate administration of herbal drugs described in one of the commonly practiced and authenticated book Bhavaprakasha Nighantu written by Bhavmishra in 16thAD.[17]

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It includes 23 chapters delineating near about 800 Drugs. This Nighantu incorporates drugs of plants, animals as well as mineral origin and considered as the best Nighantu of modern time in the field of Ayurveda. [18]

MATERIALS AND METHOD

Out of total 23 Vargas (classified group), eight Varga i.e. Haritakyadi, Karpuradi, Guduchyadi, Pushpadi, Vatadi, Phala, Dhanya and Shaka Varga comprising near about 480 drugs were reviewed critically with regards to effects of different medicinal plants on provocation of Dosha, Dhatu(tissue system), Mala (waste product). Development of different disease condition due to improper administration of the drugs and diet were also noted down. Further the contraindications of any medicinal plants reported in the texts were also noted down. The observations have been given according to the Varga/chapter wise presentation in text and in tabular form consisting of the name of the plant, part used, botanical name, its effect on Dosha, Dhatu, Mala and others specific adverse effect on any system or organ if any.

RESULTS AND DISCUSSION

The observed data in relation to the possible adverse effects of drugs mentioned in Bhavprakasha Nighantu have been tabulated in Table 1. After a thorough review through the eight Vargas of text comprises near about 480 drugs, 196 drugs of herbal origin have been found to be reported for their possible adverse effect, if not prepared /administered under proper medical supervision

Haritakyadi Varga

In this Varga, out of 94 plants, possible adverse effect of 26 drugs have been reported including 4 drugs belonging to Lavana (salt) and Kshara (alkali) category. Bibhitaka (*Terminaliia bellirica*), Parsikayavani (*Hyosymus niger*), Bhanga (*Cannabis sativa*) and Khaskhasa (*Papaver somniferum*) are reported with Madakrut action (slight intoxication). Clinical experience of the same is reported for *Hyosymus niger* and *Cannabis sativa*[19][20] which should not be neglected in clinical practice. Contraindications for therapeutically most useful drugs Haritaki (*Terminalia chebula*) and Aardraka (*Zingiber officinale*) again highlights the vigilant aspect of Ayurveda towards safety of patients. A keen observation is noted when the author mentions about the probable adverse effects of the specific parts Viz. Bibhitaka Majja (fruit pulp of *Terminalia bellarica*) and Avastha (status of drug) Viz. dry Maricha (*Piper nigrum*) and Pippali (*Piper longum*). Fourteen drugs have been mentioned for their Pitta Dosha elevating property. Parsikayavani (*Hyosymus niger*) and Jiraka (*Cuminum cyminum*) are reported with Grahini action (Therapeutic absorptive measure**)** effective in treatment of Atisara (Diarrhoea), Grahani (Irritable bowel syndrome) but drugs with this action should be avoided in constipation. Yavani (*Trachyspermum ammi*), Dhanyaka (*Coriandrum sativum*), Shatapushpa (*Foeniculum vulgare)*, and Khasakhasa (*Papaver somniferum)* are mentioned for their adverse effect on Shukradhatu (male reproductive system).

Karpuradi Varga

Drugs of this group consist of 58 aromatic drugs like Karpura (*Cinnamomum camphora*), Chanada (*Santalum album*) etc. Among these, 9 drugs have to be administered with care because of its property and action.

Three drugs Viz. Aguru (*Aquailaria agallocha*). Guggulu (*Balsamodendron mukkul*), Twakapatra (*Cinnamomum cassia*) vitiate Pitta and one drug Viz. Padmaka (*Prunus puddum*) vitiate Vata Dosha. Priyangu (*Callicarpa macrophylla*) leads to constipation and Renuka (*Vitex agnus- castus*) is reported with Garbhapatini (abortive) action.

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Guduchyadi Varga

In this chapter details of 124 drugs were mentioned, out of those 44 drugs have to be administered with care because of its property and action. Sixteen drugs are Vataprakopaka (vitiate Vata Dosha), 14 Pittaprakopaka (vitiate Pitta Dosha) and 3 are Kaphadosha Prakopaka (vitiate Kapha Dosha). Kalihari (*Gloriosa superba*) is reported as Garbhapatini (abortifacient) and Karaveera (*Nerium odorum*) as Vishavat (poisonous). Dhatura (*Dhatura metel*), Shyma Trivrut (*Operculina turpenthum*) are reported with Madakrut (narcotics) action having side effects on CNS. Shigru (*Moringa pterygosperma*) seeds and Bhutruna (*Cymbopogon citrates*) are stated as Avrushya (antispermatogenic). Eranda (*Ricinus communis*), which is mostly practice drug, is specified with its part used as leaves Rakapittaprakopaka (vitiate Rakta and Pitta Dosha), fruit is Atiushna (very hot in potency) and fruit pulp as purgative.

Pushpa Varga

In this group, out of 33 drugs, eleven are reported for side effect on Dosha, Dhatu and Mala. Tulasi (*Ocimum sanctum*) and its variety Barbari (*Ocimum basilicum*) are reported as Pittakrut (vitiate Pittadosha). Vishtambhi (heavy to digest) action has been noted for Padmini (*Nelumbium speciosum*), Kalhar (*Nymphaea alba*) and Kadamba Pushpa (*Anthocephalus cadumba*).

Vatadi Varga

Eight drugs, out of 40 big trees described under this group, are mentioned with their possible side effects. Among them, Shinshapa (*Dalbergia sissoo*) and Arishtaka (*Sapindus mukorossi*) reported for their Garbhapatini (abortificant) and Katabhi (*Careya arborea*) and Moksha (*Schrebera swietenioides*) for their Shukrahat (antispermatogenic) properties.

Phaladi Varga

This group describes edible fruits which are otherwise considered healthy but still pose problems when consumed recklessly. Out of 56fruits, 39 fruits are reported for their possible side effects. Mango, one of the most favorite seasonal fruit, in unripe condition leads to vitiation of Tridosha and Rakta Dhatu. Mango may hamper digestive system and eyes if consume more. This suggests that, mango should be use warily. Among all fruits, five may hamper Agni (digestive system), two may hamper eye whereas three may act on CNS, reported with Moha (confusion) Madakrut (Slight intoxication) action, if used irrationally. Panasa (*Artocarpus integrifolia*) is contraindicated in Gulma (abdominal disorders) and Mandagni (decrease digestive power). Kharbujam (*Cucumis melo*), turned into Amla (sour), Madhura Rasa (sweet taste) and Kshara (alkaline) is reported as Raktapittakara (causing blood disorder) and Mutrakrucchakara (causing dysuria). Riped fruit of Trapusa (*Cucumis sativus*) vitiate Pitta Dosha.

Dhanya Varga

This group consists of 33 plants of different varieties of Dhanya (Grains), Shali (cereals), Shashtika (a type of rice), Shuka (awned grains), Shimbi (pulses) and Kshudra Dhanya. All the members of this Dhanya group are reported for their Badhaalpavarchasa (constipative) properties and the Shimbi as Adhmankaraka (causes distention of abdomen) except Mudga (*Phaseolus mungo*) and Masura (*Lens esculentus*). Among the drugs of Dhanya Varga; 23 are reported with side effects. Nishpava (Dolichos lablab), Kulattha (*Dolichos biflorus*) and Atasi (*Linum usitatissimum*) are Shukraghna (antispermatogenic) whereas Yavannala (*Sorghum vulgare*) is Avrushya (anti spermatogenetic/aphrodisiac). Dry and roasted Chanaka (*Cicer arietinum*) is Kushthaprakopaka (causes skin diseases),

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whereas Triputa (*Lathyrus sativus*) is Khanjatwa Pangutwakari (hamper mobility). Atasi (*Linum usitatissimum*) has been reported for its possible harmful effect on eye/eyesight.

Shaka Varga

All the vegetables are considered as harmful to the eyesight. They also reduce the sexual potency, mental power and strength. Among 66 different Shaka (vegetables); 28 are reported with side effects. Shimbi shaka (group of legumes) is botanically not identified. Sarshapa (*Brassica campestris*) is reported as Tridoshkrut (vitiating Vata, Pitta and Kapha) and specially mentioned as Nindita (condemn for lowest quality) among all Shaka. It has been advised to avoid Surana (*Amorphophallus campanulatus*) in Rakatapitta (bleeding disorders), Dadru and Kushtha (skin disorders).

Action on Dosha

About 196 drugs are reported for their possible side effects on Dosha, Dhatu, Mala and different organ, among them maximum 67 drugs have been reported to vitiate Pitta Dosha, 59 drugs have been reported to vitiate Vata Dosha, and 38 reported to vitiate Kapha Dosha whereas 4 drugs namely Vanshakarira (*Bambusa arundinacea*), ripe Bilwa (*Aegle marmelos*) fruit, Lakucha (*Artocarpus lakoocha*) fruit, and Sarshapashaka (leafy vegetable of *Brassica campestris*) have been reported to vitiate all the three Dosha. (Table 2)

The base of all physiological functions of the body is Tridoshas viz., Vata, Pitta and Kapha. Normal level of Doshas fluctuates due to the changes in different factors like time where Kapha increases in early period of the morning. Even at the different level of digestion fluctuation occurs. Whatever is taken in the body in the form of Ahara or Aushadha is going to affect the Doshas with its properties. Some of the drugs directly cause the vitiation of Doshas, which may be because of their properties or Swabhava (nature). The examples of such drugs have been compiled here.

Action on Dhatu

About 196 drugs for their possible side effects on Dhatu (tissue), 30 drugs have been reported with some side effect on Rakta(blood), Shukra(sperm), and Meda Dhatu(Adipose tissue). Among them 15 drugs have adverse effect on Shukra Dhatu, 14 on Rakta Dhatu and one on Meda Dhatu. Dhatus (tissue system) have been given prime importance. Some of the Dravyas (substance) target Dhatus directly or indirectly by vitiating the Doshas. Aggravation or diminution of the Dhatus either partially or in their entirely constitutes leads to diseases. Maximum drugs are having impairment on the Rakta and Shukra Dhatu which may be due to similar properties of the drugs with Pitta and Kapha Dosha

Action on Mala

Possible adverse effects of 73 drugs of herbal origin on Mala (excrete matter) are available in this Nighantu. Among them three are Mutrala (diuretic), whereas Vanshayava (*Bambusa arundinacea*) may cause Badhamutrata (oliguria). Arka Ksheera (latex of *Calotropis procera* and *C gigantean*) Snuhi Ksheera (latex of *Euphorbia neriifolia*), Katuparni (*Argemone mexicana*), Trivrut (*Operculina turpethum*) are reported with Rechaniya (purgative) action and rest of 65 drugs have constipative action, if used irrationally. Shali (a variety of rice) is reported to cause Baddhalpavarchas (hard and less amount of stool) whereas Yava (*Hordeum vulgare*) is reported for its Bahumalo (increasing excretory matter production) property. There are direct references of four drugs i.e Priyangu (*Callicarpa macrophylla*), Kakodumbara (*Ficus hispida*), Rajamra and Bimbi (*Coccinia indica*) causing constipation.

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Table 1: Reported effects of medicinal plants described in Haritakyadi to Shaka Varga

Sanskrit name	Latin name	Part used	Dosha	Dhatu	Mala	Other possible adverse effects	Ref
			Haritakyadi Varga				
Haritaki	*Terminalia Chebula* Retz	Fruit				Contraindicated in Adhwatikhinno (fatigue), Balavarjit (debility), Krusha (emaciated), Pittadhiko, Garbhini (pregnancy), Vimuktarakta (blood-letting)	35
Bibhitaka	*Terminalia belerica* Roxb.	Majja (Fruit pulp)				Madakrut (intoxication)	37
Aadrak	*Zingiber officinale* Rosc.	Rhizome				Avoid in Kushtha (skin disease), Pandu (anemia), Mutrakruchha (dysuria), Raktapitta (bleeding disorder), Vrana (wound), Jwara (fever), Daha (burning sensation). Should not consume in Gresshma (summer) and Sharad Rutu (autumn season)	50
Shushka pipali	*Piper longum* Linn.	Fruit	Pittaprakopini				56
Shushka maricha	*Piper nigrum* Linn.	Fruit	Pittakara				60
Pippalimool	*Piper longum* Linn.	Root	Pittakara				65
Yavani	*Trachyspermum ammi* Linn.	Fruit,	Pittala	Shukrahat (antispermatogenic)			77
Ajamoda	*Apium graveolens* Linn.	Fruit				Ushna (hot), Vidahini (causing heart burn)	79
Parsikyavani	*Hyoscymus niger* Linn.	Fruit			Grahini (absorb fluid / constipative)	Madini (Slight intoxication)	80
Jiraka	*Cuminum cyminum* Linn.	Fruit	Pittala		Sangrahi		84
Dhanyaka	*Coriandrum sativum* Linn.	Fruit		Avrushya	Grahi, Mutrala (diuretic)		87
Shtapushpa	*Anethum sowa* Kurz.	Fruit	Tikshna, Pittakrut	Shukrahat			90
Hingu	*Ferula narthex* Boiss.	Niryasa/Exudate	Pitta wardhana				101
Tumbaru	*Zanthoxylum alatum* Roxb.	Fruit			Rechani (purgative)	Vidahi (causing heart burns)	114
Katuparni	*Argemone mexicana* Linn.					Utkleshkarini (exciting phlegm)	170
Jyotishmati-	*Celastrus paniculatus* Willid.					Atiushna (very hot), Vamini (induce vomiting), Tikshna (sharp)	172
Kusumbha	*Carthamus tinctorius* Linn.	Flower	Vatala				192
Karpuraharidra	*Curcuma amada* Roxb.		Vatala				199
Bakuchi	*Psoralea corylifolia* Linn.		Pittala				209
Lasuna	*Allium sativum* Linn.		Pittavruddhi	Astra vruddhi		Should avoid Vyayam (exercise), Aatap (sun exposure), Krodha (anger), and should not consume water, milk and jaggery	222
Palandu	*Allium cepa* Linn.		Kaphakrut				227
Bhanga	*Canabis sativa* Linn.		Pittala		Grahi	Moha Madakrut	233
Khakhasa	*Papaver somniferum* Linn.		Vatakruta	Sevanat Punsatva nashnam (infertility)	Grahi	Madakruta	236
Ahiphena	*Papaver somniferum* Linn.	Latex of fruit	Vata pittalam		Grahi		238
Shakambhari	Sambar Salt		Pittalam				243
Samudra lavana	Common Salt		Shleshmala				244
Chanakamla	*Cicer arientum*	Alkali preparation	Ati Ushna				251
Tankana Kshara	*Soduium borate*		Vatapittakrut				256

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			Karpuradi Varga				
Aguru	*Aquailaria agallocha* Roxb.	Oil	Pittala				21
Padmaka	*Prunus puddum* Roxb.	Tuber	Vatala				30
Guggula	*Balsamodendron mukkul* Hook.ex Stocks.	Latex	Pittala				38
Jatiphala	*Myristica fragrans* Houtt.				Grahi		54
Twakpatra	*Cinnamomum cassia* Blume.	Leaf	Pittala	Shukrahat			65
Musta	*Cyperus rotundus* Linn.				Grahi		93
Gandhapalashi	*Hedychium spicatum* Ham.ex Smith				Grahini		100
Priyangu	*Callicarpa macrophylla* Vahl.	Fruit			Vibandha (constipation);Adhmana (flatulence); Sangrahi		104
Renuka	*Vitex agnus*- castus Linn.	Seed				Garbhpatini (abortifacient)	106
			Guduchyadi Varga				
Nagavalli	*Piper betel* Linn.	Leaf	Pitakruta	Rakta			12
Bilwa	*Aegle marmelos* Corr.	Fruit pulp	Pittakruta				13
Shonaka	*Oroxylum indicum* Vent.	Fruit	Vataprakop		Grahi		26
Bruhati	*Solanum indicum* Linn.	Fruit	Pittakrut		Grahini		36
Jeevanti	*Leptadenia reticulate* W&A				Grahini		51
Mudgaparni	*Phaseolus trilobus* Ait				Grahini		54
Mashaparni	*Teramnus labialis* Spreng.		Balaskruta		Grahini		56
Eranda	*Ricinus communis* Linn.	Root	Pitta prakopanam	Rakta prakopanam	Vidbhedi (breaking stool/purgative)		64
Rakt arka	*Calotropis procera* R.Br.	Flower			Samgrahi		71
Arka	*Calotropis gigantean* Linn.	Latex			Virechana (purgative)		72
Snuhi	*Euphorbia neriifolia* Linn.	Latex			Virechana		75
Satala	*Euphorbia tirucalli*		Vatala				79
Kalihari	*Gloriosa superb* Linn.	Root	Pittala			Garbhapatini	81
Karveer (Shweta and rakta)	*Nerium odorum* Soland	Root				BhakshitaVishavata (poisonous)	84
Dhatura	*Dhatura metel* Linn.	Leaf	Vatakarak			Madakruta	87
Vasa	*Adhatoda vasica* Nees	Leaf	Vatakruta				89
Parpata	*Oldenanldia corymbsa* Linn.	Whole plant	Vatalo		Sangrahi		92
Nimba	*Azadiracta indica* Linn.	Leaf	Vatala			Ahrudya (harmful for heart)	94
Mahanimba	*Melia azedirach* Linn.				Grahi		98
Kanchanara	*Bauhinia variegata* Linn.	Flower			Samgrahi		104
Shobhanjan (Shyama)	*Pongamia glabra*	Fruit	Pittaprakopan	Rakta	Samgrahi	Vidahkrut	106
Shweta shigru	*Moringa oleifera* Lam.					Visheshat Dahakrut (specially causes burning sensation)	107
Shigru	*Moringa pterygosperma* Gaertn	Seed		Avrushya (antispermatogenic)			110
Karanja	*Pongamia glabra* Vent.		Pittal				121

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Karanji	*Holoptelia integrifolia* Planch				Stambhani (withholding body fluid)		123
Jalwetasa	*Salix tetrasperma* Roxb.		Vatakopana				137
Ankola	*Alangium lamarckii* Thwaites.	Fruit			Viechanam		141
Karpasa	*Gossypium herbaceum* Linn.	Fruit	Kaphakara				152
Vansha kareera	*Bambusa arundinacea* Willid.		Kaphakruta, vatapittalam				155
Vanshayava	*Bambusa arundinacea* Willid.		Vatapittakara		Badhamutra (Oliguria)		156
Eraka	*Typha elephantine* Roxb.		Vatakopini				164
Bhutruna	*Cymbopogon citrates* DC. Stapf		Pitta	Avrushya, Raktapradushanam (blood impurification)			171
Gandadurwa	*Cynodon dactylon* (L.)Pers		Vatakruta,		Grahini		176
Varahikanda	*Dioscorea bulbifera* Linn.		Pittawardhini				179
Shyama Trivruta	*Operculina turpenthum* Silva Manso				Virechana	Murccha (Syncope), Daha (Burning sensation), Mada (Intoxication), Bhranti (Giddiness), Kantotkarsha (Irritation in throat region)	196
Apamarga phala-	*Achyranthes aspera* Linn.				Vishtambhi (obstruction of flatus)		223
Asthisamharaka	*Cissus quadrangularis* Wall.		Pittala				227
Rakta punarnava	*Trianthema portulacastrum* Linn		Vatala		Grahini		233
Kaknasa	*Martynia diandra* Glox.						249
Meshshrungi	*Gymnema sylvestre* R .Br.		Vatala				254
Aakashvalli	*Cuscuta reflexa* Roxb.				Grahini		259
Matsyakshi	*Alternanthera sessilis* Linn.				Grahini		266
Dugdhika	*Euphorbia hirta* Linn.		Vatala		Vishtambhini		275
Bhumyamlaki	*Phyllanthus niruri* Linn.		Vatakruta				278
Drona	*Leucas cephalotus* Spreng		Vatapittakruta				283
Jalapippali	*Lippia nodiflora*				Samgrahini		296
Gojivha	*Elephantopus scaber* Mich.		Vatala		Grahini		297
Cchikani	*Centipeda orbicularis* Lour		Pittakruta				304

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			Pushpadi Varga				
Padmini	*Nelumbium speciosum* Willd.	Flower	Vata karini		Vishtambha		7
Mrunala	*Nelumbium speciosum* Willd	Stalk of plant	Anilakapha pradama		Samgrahi	Durjara (difficult to digest)	13
Kalhara	*Nymphaea alba* Linn.	Flower			Grahi Vishtambhi (constipative)		18
Shatapatri	*Rosa centifolia* Linn.	Flower			Grahini		23
Yuthika	Jasminum *auriculatum* Vahl.	Flower	Kaphavatalam				30
Kadamba	*Anthocephalus cadumba*	Flower	Kapha anilaprada		Vishtambhkrut		36
Ashoka	*Saraca indica* Linn.	Flower			Grahi		47
Bandhujeeva	*Pentapetes phoenicea* Linn.	Flower	Kapha kruta		Grahi		57
Japa	*Hibiscus rosa-sinensis* Linn.	Flower			Samgrahini		58
Tulasi	*Ocimum sanctum* Linn.	Flower	Pittakruta			Daha (burning sensation)	62
Marubaka	*Origanum majorana* Linn.	Flower	Pittala				65
Barbari	*Ocimum basilicum* Linn.	Flower	Pittala				71
			Vatadi Varga				
Parisha	*Thespesia populnea* Soland.		Kaphaprada			Krumi (worm infestation)	5
Kakodumbara	*Ficus hispida* Linn.				Malastambha kruttika (constipative)		10
Shinshapa	*Dalbergia sissoo* Roxb					Garbhapatini	25
Arishtaka	*Sapindus mukorossi* Gaertn.					Garbhapatini	38
Palasha	*Butea frondosa* Koen. ex Roxb.	Flower	Vatala		Grahi		52
Shalmali	*Bombax malabaricum* DC		Shleshmala				55
Varuna	*Crataeva nurvala*Buch-Ham		Pittala				65
Katbhi	*Careya arborea* Roxb.		Kapha	Shukrahat (antispermatogenic)			68
Moksha	*Schrebera swietenioides* Roxb.			Shukranut (antispermatogenic)			70
Phaladi Varga							
Amra	*Mangifera indica* Linn.	Flower	Vatala		Grahi		2
		Unripe fruit	Tridosh,	Raktakrut			3
		Gaalit Amrarasa (sucked juice)	Kaphavardhana			Ahrudya	9
		Sour fruit- (if used in excess)		Raktamaya (bleeding diseases)		Nayanamayaam (harmful to eyesight), Mandaanalatav (lower digestive fire), Vishamjwara (fever of irregular mode), baddhagudodara (constipation)	12
Amrataka	*Spondias mangifera* Willd.	Ripe fruit	Shelshmala		Vishtambhi		20
Rajamra			Vatalam		Grahi, Vibandha aadhmana kruta		22
Koshamra	*Schleichera trijuga* Willd.	Unripe fruit	Pittala		Grahi		24
Panasa	*Artocarpus integrifolia* Linn	Unripe fruit	Kapha	Meda vrudhi	Vishtambhi	Avoid in Gulma (abdominal lump) & Madangni (low digestive fire)	27
Lakucha	*Artocarpus lakoocha* Roxb.	Unripe fruit	Tridoshkrut; Kaphakar- Ripe fruit	Raktakrut; Shukra nashan		Netrayoahitam (harmful to eyesight), Agninashan (hamper digestive fire)	31
Chirbhita	*Cucumis momordica* Roxb.		Pittala		Grahi, Vishtambhi		37

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Narikela (Jeerna)	*Cocos nucifera* Linn		Pittakari		Vishtambhi	Vidahi	40
Kalindama	*Citrullus vulgaris* Schrad	Unripe fruit	Pittal- ripe fruit	Shukra hat	Grahi Druka hat		43
Kharbujama	*Cucumis melo* Linn	if Amla, Madhura and Kshara	Rakta pittakar			Mutrakrucchakara param (dysuria)	46
Trapusa	*Cucumis sativus* Linn	Ripe fruit	Pittala				48
Guwaka	*Areca catechu* Linn					Mohanam	50
Guwaka	*Areca catechu* Linn	Fresh fruit				Abhishyandi (hygroscopic), Vanhi drushtiharam (hamper digestive fire and eyesight)	51
Talaphala(ripe)	*Borassus flabellifer* Linn		Pitta kapha vivardhanam. Shleshmala- Fruit pulp	Rakta vivardhanam	Bahumutra (diuretic)	Durjara, Tandrakaram (sleepiness), Abhishyandi (oozing)	53
Talarasa/tadi	*Borassus flabellifer* Linn	Water/ Fruit juice	Pittakrut- if sour in taste.			Ati Madakrut	55
Bilwa	*Aegle marmelos* Corr	Ripe	Tridosham		Vishtambhikara. Grahi- Unripe fruit	Durjara, Vidahi, Vanhimandyakrut (lower digestive fire)	58
Kapiita	*Ferronia elephantum*	Ripe			Grahi-Unripe	Durjara	62
Tinduka	*Diospyros embryopteris* Pers.	Unripe fruit	Vatala		Grahi		65
Kupilu	*Strynus nux vomica* Linn.		Vatala		Grahi	Madakruta	68
Rajajambu	*Eugenia jambolana* Lam.				Vishtambhi		69
Kshudrajambu	*Eugenia heyneana* Wall.				Samgrahini		70
Kola Badara	*Zyziphus jujube* Lam.		Kapha pittakaram		Grahi		75
Karmarda	*Carissa carandus* Linn		pittakapha Pradam	Rakta			82
Priyala	*Buchnania latifolia* Roxb.				Vishtambhi	Atidurjara, Aamvardhana	85
Padmaksha	*Nelumbium speciosum* Willd		Kapha vatakaram		Vishtambhi		90
Shrungataka	*Trapa bispinosa* Roxb.				Grahi		93
Madhuka	*Bassia latifolia* Roxb.					Ahrudya	97
Parushaka	*Grewia asiatica* Linn	Ripe fruit	Pittakar			Vishtambhi	98
Tuta	*Morus indica* Griff.	Unripe				Raktapittakrut	100
Dadim	*Punica granatum* Linn				Grahi		103
		Sour fruit	Pittajanakam				104
Bahusara	*Cordia myxa* Roxb.	Unripe fruit			Vishtambhi		106
Draksha	*Vitis vinifera* Linn					Koshtha Marutkrut (cause flatulence)	111
		Unripe and sour				Raktapittakrut	112
Kharjura	*Phoenix sylvestris* Roxb.				Vishtambhi		118
		Fruit juice	Pittakara			Madakara	121
Vatada	*Prunus amygdalus* Batsch.		Kaphakrut			Na eshto Rakttapittavikarinam (not beneficial for bleeding disorder)	124
Sevam	*Pyrus malus* Linn		Kaphakrut				126
Peelu	*Salvadora Persia* Linn		Pittala		Bhedi (purgative)		128
Akshota	*Juglans regia* Linn		Kaphapittakrut				129
Karmaranga	*Averrhoa carambola* Linn				Grahi		141
Amlika	*Tamarindus indica* Linn	Unripe fruit	Pittakaphakrut	Rakta			144
Amlavetasa	*Garcinia pedunculata* Roxb.		Pittala				145
Vrukshamla	*Garcinia indica* Chois.	Ripe fruit			Samgrahi		148

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Dhanyadi Varga

Shali				Baddhaalpavarchas (constipative), Mutrala		7
Kaidara shali	Shali obtained from ploughed field	Kaphala				9
Vapita shali	Shali obtained from growing seed	Shleshmala				11
Cchinarudha	Shali growing after harvesting			Badhavitak (constipative)		14
Shashtika	*Oryza sativa* Linn			Badhavarchasa (constipative)		24
Yava	*Hordeum vulgare* Linn	Bahuvata		Bahumalo (increasing excretory matter production)		29
Godhuma	*Triticum sativum* Lam.	Kaphaprada				32
Masha	*Phaseolus mungo* Linn	Pitta Kapha prada	Meda			42
Rajamasha	*Vigna catiang*Walp	Vatakaro				44
Nishpava-	*Dolichos lablab* Linn		Shukra nashana		Vidahi , Ushna	46
Vanamudga	*Phaseolus aconitefolius* Jacq.	Vatalo				49
Masoora	*Ervum lens* Linn	Vatala				50
Aadhaki	*Cajanus indicus* Spreng.	Vatajanani		Grahini		52
Chanaka	*Cicer arietinum* Linn	Vataprakopaka			Kushta prakopanam (elevate skin diseases)	55
Triput	*Lathyrus sativus* Linn				Khanjatva Pangutvakari (hamper mobility)	59
Kulattha	*Dolichos biflorus* Linn	Pittarakta krut	Shukraghna			63
Atasi	*Linum usitatissimum* Linn		Shukraghna		Drukaghna (hamper eyesight)	67
Tuvari	*Eruca sativa*			Grahini		68
Sarshpa	*Brassica campestris* Linn	Pittavivardhnam	Rakta			70
Rajika	*Brassica juncea* Linn	Pittakrut	Rakta			72
Kangu	*Setaria italic* Beauv	Vatakruta				77
Shyamaka	*Echinochloa frumentacea* Linn	Vatala				79
Kodrava	*Paspalum scrobiculatum* Linn	Vatalo				80
Vanakodrava	*Paspalum scrobiculatum* Linn	Vatakaro				80
Charuka	*Saccharum munja* Roxb.	Vatakopnam				81
Vanshyava	*Bambusa arundinaceae*	Vatapittakara				82
Gawedhuka	*Coix lachrymal* Linn.				Karshyakruta (emaciating)	85
Nivara	*Hygroryza aristata* Nees	Kaphavatakruta				86
Yavanala	*Sorghum vulgare* (Linn.) Pers.				Kledakruta (cause wetness)	87

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			Shaka Varga				
Potaki	*Basella rubra* Linn.	Leaf	Shleshmala				8
Marisha	*Amaranthus blitum* Linn.	Leaf	Vata Shleshma kara		Vishtambhi		10
Palakya	*Spinacia oleracea* Linn.	Leaf	Vatala Shleshmala		Vishtambhini		16
Kalashaka	*Corchorus capsularis* Linn.	Leaf	Vatakruta		Vishtambhini		17
Pattashaka	*Corchorus olitorius* Linn.	Leaf	Vatakopana		Vishtambho		18
Bruhat Loni (Ghotika)	*Portulaca oleracea* Linn.	Leaf	Vatakruta				21
Changeri	*Oxalis corniculata* Linn.	Leaf	Pittala				23
Chukrika	*Rumex vesicarius* Linn.	Leaf	Kaphapittakruta				25
Moolaka	*Raphanus sativus* Linn	Leaf -without oil	Kaphapittakrut				33
Dronapushpi	*Leucas cephalotes* Spreng	Leaf	Pittakruta				34
Yavani	*Carum copticum* Benth &Hook	Leaf	Pittala				35
Parpata	*Oldenanldia corymbosa* Linn.	Leaf	Vatala				38
Guduchi		Leaf			Samgrahi		42
Chanaka	*Cicer arietinum* Linn.	Leaf	Kaphavata kruta		Vishtambhajanaka		45
Sarshpa	*Brassica campestris*	Leaf	Tridoshkrut			Shakeshu Ninditam (condemn for lowest quality in leafy vegetable)	47
Shalmali	*Bombax malabaricum* DC	Flower	Vatala		Grahi		52
Kushmanda	*Benincasa cerifera* Savi	Fruit	Kaphakarakam				54
Kushmandi	*Cucurbita pepo* Linn.	Fruit			Grahini		57
Karkati(ripen)	*Cucumis utilissimus* Roxb.	Fruit	Pittakruta		Grahini		61
Karvellaka	*Momordica charantica* Linn.	Fruit	Vatala				63
Rajkoshatki	*Luffa acutangula* Roxb.	Fruit	Kaphavatakruta				68
Bimbi	*Coccinia indica*W&A	Fruit			Stambhana Vibandha aadhmana Kruta (constipative)		74
Shimbi	--	Fruit	Shleshmala			Dahakara (burning sensation)	75
Kolashimbi	*Canavalia gladiate* DC	Fruit	Kaphapitta krut	Shukra agnisadakrut	Baddhavit (constipative)		77
Vruntaka	*Solanum melongena* Linn.	Matured Fruit	Pittalam				80
Dindisha	*Citrullus vulgaris*	Fruit	Vatalo				84
Surana	*Amorphophallus campanulatus* Blume.	Kanda (Tuber)				Should avoid in Raktapitta, Dadru (eczema), Kushtha	93
Aaluka	*Dioscorea* sp.	Tuber	Kaphaanilakar		Vishtambhi	Durjara	97
Grunjan	*Daucus carota* DC.	Tuber			Samgrahi		104
Varahikanda	*Dioscorea bulbifera* Linn.	Tuber	Pittala				107
Kemuka	*Costus speciosus* Koen. Sm	Tuber	Vatalam (eleveate *vata*)		Grahi		111
Kasheru	*Scirpus kysoori* Roxb.	Tuber	Anilshleshmakaram (elevate Vata and Kapha)		Grahi		112
Shaluka (kamalakanda)	*Nelumbium speciosum* Willd	Tuber	Anilkaphapradam (elevate Vatakapha)		Samgrahi	Durjara	114

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Table 2: Reported Effect of medicinal plants on development of different disease conditions

	Reported side effect of medicinal plants on Dosha				Dhatu		Mala	Organ specific	
Varga	Vata	Pitta	Kapha	Tridosha	Rakta	Shukra	Purisha/ Mutra	Netra	Garbha
Haritakyadi	5	14	3		1	4	4		
Karpuradi	1	3	0			1	1		1
Guduchyadi	16	14	3		4	2	12	1	1
Pushpadi	3	3	3				4		
Vatadi	1	1	2			2	1		2
Phala	5	17	14	3	6	2	28	4	
Dhanyadi	13	5	5		3	3	6	1	
Shaka	15	10	9	1		1	16		
Total	59	67	38	5	14	15	72	6	4

Action on organ

Among 196 drugs reported for their possible adverse effects, six drugs have been reported with side effect on eyes or eye sight, whereas 4 drugs are mentioned as Garbhapatini (abortive). Nimba (*Azadiracta indica*), Amra (sucked juice of *Mangifera indica*), and Madhuka (*Bassia latifolia*) are reported as Ahrudya (not good for heart).

Others

Haritaki (*Terminalia Chebula*), Aardraka (*Zingiber officinale*), Panasa (*Artocarpus integrifolia*) and Surana (*Amorphophallus campanulatus*) have been contraindicated in certain condition diseases or disease like conditions. Certain drugs/diet/activities are advised to be avoided during consumption of Lasuna (*Allium sativum*). Side effect of the overuse of sour mango is also mentioned specifically. Tuta (*Morus indica*), unripe/sour Draksha (*Vitis vinifera*) and Vatada (*Prunus amygdalus*) are reported as Raktapittakaraka (vitiating bleeding disorder), whereas Chanaka (*Cicer arietinum*) is mentioned as aggravating factor for Kushtha (Skin disease). Among these, Eight drugs are reported as Madakrut (intoxication), Jyotishmati (*Celastrus paniculatus*) is reported as Vamini (induce vomiting).

CONCLUSION

Bhavprakasha Nighantu is one of the most referred Nighantu by the Dravyaguna experts. Comprehensive review of its eight chapters dealing with herbal drugs reports possible pharmacovigilance aspect of 196 drugs.

The present review reports contraindications, possible adverse effects on Dosha, Dhatu, Mala, on organ due to due to improper administration effect of certain drugs. These aspects do not limit to medicines but also food stuffs including cereals, pulses, fruits and vegetables that are consumed daily. These mentioned possible risk of adverse effect can be minimize by following various guidelines and instructions mentioned in classical text of Ayurveda related to administration of drugs and dietetics. To ensure the safety of drugs it is very important to understand and study the principles of drug safety mentioned in Ayurveda and to follow the does and don't during prescription and consultation.

This review article will be beneficial for consideration of Pathyaapathya (dietary and behavioral regimen) that must be adopted in daily routine.

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