



## An ayurvedic prevention and management of hypertension

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### Abstract

Hypertension is persistent elevated pressure in the arteries. Its enormity can be assessed by the conglomeration of grave diseases which affect heart, brain, kidney etc. Considering the high prevalence & disastrous consequences of hypertension there is a need to look for alternative medicines. *Ayurvedic* science is based on treating diseases by addressing three aspects: *Ahara, Vihara & Ausadha*. This study is a brief compilation on different aspects of hypertension & the interventions which can subdue them. Hypertension can be prevented by following healthy *Ahara* and *Vihar*. Broadly hypertension patients can be approached according to *Haemovascular dysfunction* which can be treated by *Samana* and *Shodhana Chikitsa* & Stress induced cases treated with *Medhya Rasayana*.

**Keywords:** *Haemovascular dysfunction, Hypertension, Medhya Rasayana, Samana, Shodhana, Stress*

### Introduction

Hypertension or high blood pressure is defined as an asymptomatic medical condition in which the blood pressure in the arteries is persistently elevated more than normal (Kodape *et al.*, 2008). Normal blood pressure is 120/80 mmHg but elevated blood pressure more than 140/90 is mmHg is termed as hypertension. Hypertension is one of the most common lifestyle diseases today. As of 2014 in world approximately one billion adults or 22% of the population had hypertension (WHO, 2016). In India about 33% urban and 25% rural Indian are hypertensive. It is slightly more frequent in men in those of low socioeconomic status and it becomes more common with age. About in 90% patients there is no known cause for hypertension and this is very important to be alert. Hypertension results from excess intake of NaCl, fatty diet, alcohol consumption, smoking, psychological stress & less physical activity, anxiety etc. Even hypertension is diagnosed instrumentally; hypertension can also diagnose with the help of symptoms which include headache, giddiness, palpitation and fatigability. In *Ayurveda*, while

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explaining *Shonita Dushti* many causative factors are elicited among those *Ati Lavana Sevana, Sura Pana, Ati Snigdha Bhojana, Surapana, Virudh Bhojana, Krodha and Ati Chinta, Shoka* etc (Shastri and Chaturvedi, 2015a) which are similar to the etiological factors of hypertension. *Shonita Dushti* will give rise to many manifestations which include *Shirashoola, Bhrama Klama* etc (Shastri and Chaturvedi, 2015b) which resembles hypertension symptoms. However, when high blood pressure persist for a long duration, then it results to cardiovascular dysfunction, damage to arterial blood vessels and increases the risk of congestive heart failure, cerebral aneurysm and kidney failure, and even lead to death. It can also damage to the liver, brains, kidneys and the heart. The damaging of these vital organs is the most important cause of the death. Considering the high prevalence & complication of hypertension there is a need to look for alternative medicines. Though a number of effective antihypertensive drugs are available in market but none of them have satisfactory results due to their more side effects so people are showing more enthusiasm to adopt *Ayurvedic* drugs which are based on the principle of maintaining good health and rejuvenating the body. *Ayurvedic* science is chiefly based on treating diseases by addressing three aspects at a time: *Ahara, Vihara & Ausadha*. The aim of the study is to study and evaluate the preventive and curative aspects of *Ayurvedic* management protocols in hypertension.



## Material and Methods

Detail description of *Vata- Pitta Pradhan Raktaprodashs Vikar* was collected from different classic books and previous research articles from internet. Detail of hypertension was collected from different modern classic books.

### Hypertension

Blood pressure is defined as pressure or force of circulating blood against the artery wall. when blood pressure elevated due to any reasons, it is termed as hypertension. Classification of hypertension according to blood pressure is given in table 1. Hypertension is of two types depending on causative factors – Primary hypertension and Secondary hypertension. Primary hypertension is idiopathic and there is no satisfactory underlying pathology described until now for the disease. This type of hypertension may be due to age related factors, smoking, alcohol consumption, stress, anxiety, NaCl containing diet etc. 90-95% cases of hypertension are of primary hypertension. Secondary hypertension results from disease like acute nephritic syndrome, nephritis, diabetes mellitus, coaraction of aorta, atherosclerosis steroid intake etc. 10% cases of hypertension falls under this category (Rathod and Kumar, 2012.).

In *Ayurvedic* texts, there is no disease with name as hypertension. According to *Acharya Charaka* it is not important to name a disease rather than its removal. *Chikitsa* should be done according to *Doshas*, *Dushya*, and *Samprapti* present in disease. However scholars had correlated hypertension with *Raktagata Vata*, *Siragata Vata*, *Vyanbala Vaishyama*, *Pittavruta Vata*, *Avarita Vata*, *Rakta Chap*, *Rrakta Vikshepa*. Hypertension is also correlated with *Vata Pitta Pradhan Raktaprodashs Vikara* due to similar causative factors and *Lakshana* (Gulati et al., 2018). *Drava*, *Guru*, *Snighdha*, *Ati Lavana*, *Ati Snighda*, *Ati Kshar*, *Surapana*, *Virudh Bhojana*, *Krodha* etc. are causative factors of *Rakta Dushti*. If *Rakta Dushti* occur then this results of *Krodha Prachurta* (mental irritability), *Buddhi Sanmohoa* (lack of concentration), *Tamo Darshana* (flashes before eye) *Klama* (fatigue), *Shirahashula* (headache), *Swedadhikya* (excessive sweating), *Anidra* (Disturbed sleep), *Bhrama* (giddiness) *Santapa* (burning sensation). Hypertension is called as silent killer because it rarely causes symptoms before it

damage the heart, kidney or brain. So there should be awareness toward hypertension so that hypertension and its complication are stopped. Regulation of blood pressure in *Ayurveda* can be understood by taking into consideration *Doshas* involved ( *Prana Vayu*, *Vyana Vayu*, *Sadhaka Pitta*, *Avalambaka Kapha*), *Dhatu* involved ( *Rasa*, *Rakta*), *Srotas* involved ( *Rasavaha*, *Raktavaha* and *Manovaha Srotas*), *Agni* (Sukmani et al., 2017).

Due to their more side effect of modern medicine people are going towards *Ayurveda* medicine. There are two approaches in *Ayurvedic* management of hypertension. One of them is preventive approach in which lifestyle is changed for betterment of health through *Nidana Parivarjana*, *Aahar* and *Vihar* so that hypertension won't occur. Another approach is curative in which treatment is done on the basis of pathogenesis (*Samprapti*). In curative aspect there are two types of *Chikitsa* one is *Shamana* (on the basis of causative factors of hypertension such as atherosclerosis, increase blood volume level, stress etc.) and other is *Shodhana* (on the basis of *Doshas*).

### Prevention

*Nidana Parivarjana* is first line of treatment for any disease. By avoiding all those causative factors which are responsible for *Rakta Dhātu Dusthi* management of hypertension is possible. Lifestyle can be improved by follow of *Dinacharya*, *Ritucharya* & *Achar Rasyana*. Proper following of these principles can reduce stress and play an important role in prevention and management of hypertension. *Pathya* and *Apthya Aahar* and *Vihar* related to hypertension is given in table 2.

### Curative methods

Management of hypertension is done either by *Shamana Chikitsa* in which different types of internal medicines are taken such as *Chedana Dravya* (*Bibhitaki*, *Marich*, *Gudachi*, etc.), *Raktaprasadak Dravya* (*Sariva*, *Manjishta* etc.), *Muttral Dravya* (*Gokshura*, *Punarnava*) & *Medhya Dravya* (*Bramhi*, *Sarpghandha*, *Sankhapushpi*); or by *Shodhana Chikitsa* in which vitiated *Doshas* are eliminated from the body through *Virechana Karma* (*medicated purgation*), *Basti*

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**Table 1- Classification of hypertension**

Category	Systolic	Diastolic
Normal	Less than 130 mm Hg	Less than 85
High Normal Hypertension	130-139 mmHg	85-89 mmHg
Stage 1 Hypertension (Mild)	140-159 mmHg	90-99 mmHg
Stage 2 Hypertension (Moderate)	160-179 mmHg	100-109 mmHg
Stage 3 Hypertension (severe)	180-209 mmHg	110-119 mmHg
Stage 4 Hypertension (very Sever)	Greater than 210 mmHg	Greater than 120 mmHg

**Table 2- Pathya and Apathya**

	Pathya	Apathya
Aahar	<ul style="list-style-type: none"> <li>Meal at fix timing</li> <li>Whole grains, Mung, Jav, Sunthi, Ardrak, Rason, Dalchini</li> </ul>	<ul style="list-style-type: none"> <li>Adhyashan (Over eating), Virudhashan (unhealthy diet).</li> <li>Meat, excessive protein and oil, excessive spicy food and salt in daily diet, excessive intake of Lavan &amp; Amla Ras.</li> </ul>
Vihar	<ul style="list-style-type: none"> <li>Daily Exercise</li> <li>Weight reduction</li> <li>Yoga-Vajrasana, Pawanmuktasana, Shavasana, Sukhasana, Dhanurasana, Makarasana and Vajrasanas), breathing exercises (Pranayama)</li> </ul>	<ul style="list-style-type: none"> <li>Aalsya (Fatigue),</li> <li>Divashyan,</li> <li>Ratrijagran,</li> <li>Smoking,</li> <li>Alcohol consumption.</li> </ul>

*Karma (medicated enema) & Siravedhya (blood vessels puncturing) because hypertension is Vata-Pitta Pradhana Raktaprodash Vikar.*

### Results and Discussion

Pharmacological actions of different oral medications and pathophysiological changes caused by Ayurvedic therapies are now showing immense efficiency in treating hypertension and avoiding its further complications. Some of the drugs and procedures used are elaborated below:

**Chedana drugs-** Chedana drugs acts on deposited *Ama* (atherosclerotic plaques) and increase the lumen of the blood vessels which subdues hypertension. Example of these type of *Chedana* drugs are-

- Bibhitaki (Terminalia bellerica)** -Bibhitaki is *Ruksha & Laghu* with *Kshaya Rasa* and *Usana Vriya*. These properties are opposite to that of
- Kapha* & inturn it helps in lowering cholesterol level. A study was carried out to determine the

mechanism of blood pressure lowering effect of crude extract of *Terminalia bellerica*. From this study it was inferred that *Bibhitaki* can be used for hypertension as it lowers blood pressure through  $Ca^{+2}$  antagonist mechanism (Khan and Anwaar, 2008).

- Marich (Piper nigrum)** – Piperine is its major active chemical compound which reduce obesity & hyperlipidemia by lowering the lipids through inhibitory action on cholesteryl ester synthesis. Chemical constitutes of Marich are Piperine, Piperidine, Pipertine, Chavicine having *Chedana* property which is used in dissolving the blockages and releasing the pressure of blood on arterial walls. Piperine its major active constituent possesses antihypertensive effect. It inhibited both phyenylephrine (which is vasoconstrictor) & high  $K^{+}$  influx and reduces contraction of heart muscles due to clearance of blockage by inhibiting  $Ca^{+2}$  channels (Pucharawipa *et al.*, 2012).



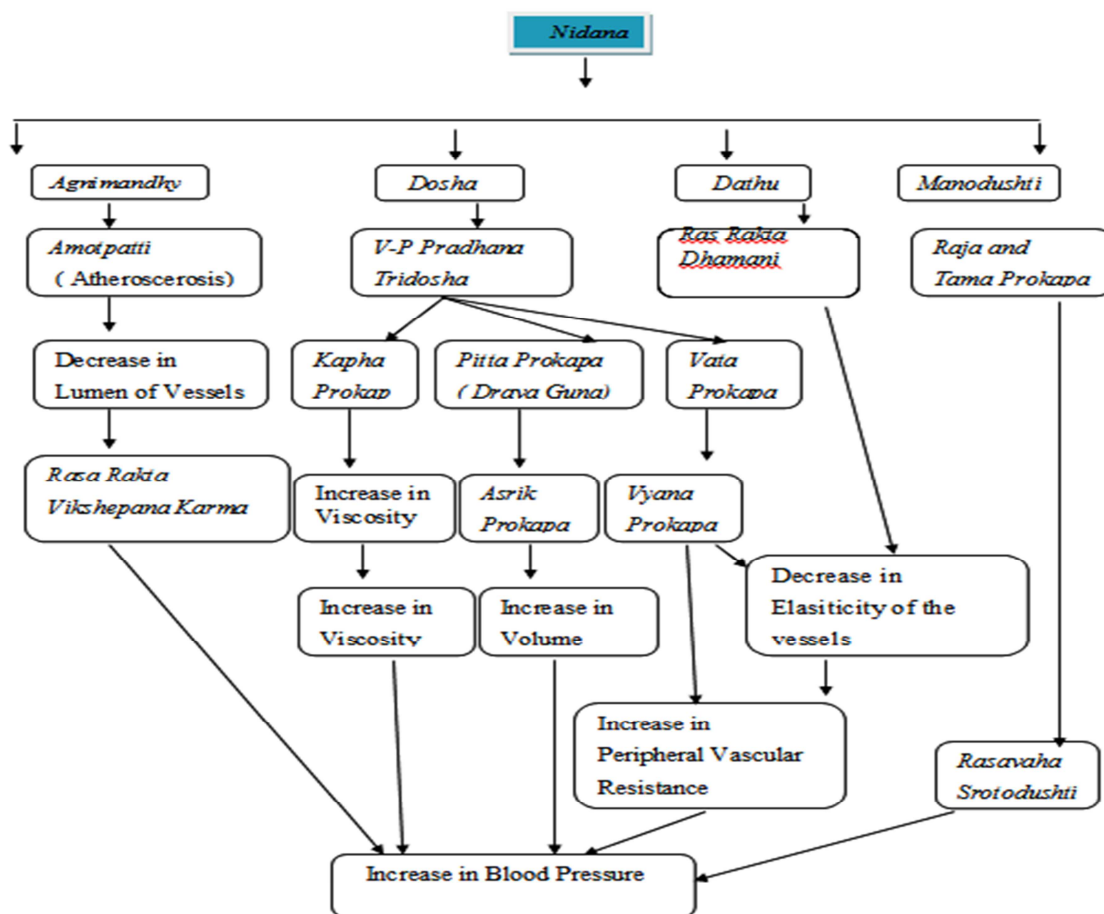


Fig 1.

4. **Guduchi** (*Tinospora Cordifolia*) – Research done on *Guduchi* show that it has anti-oxidant, anti-stress, immunostimulatory, anti-inflammatory, antihyperlipidemic. Active component is diterpenoid lactones which acts as vasorelaxant, relaxes nor epinephrine induced contraction & inhibits  $Ca^{+2}$  influx so lowers hypertension.

**Raktaprasadaka Aaushdhi-** *Raktaprasadaka Aaushdhi* acts as blood purifier by lessening the toxins or oxidants present in the blood.

1. **Sariva** (*Hemidesmus indicus*)- *Sariva* is well known for its anti-oxidant and anti-inflammatory activity. The initial step in atherosclerosis occurs by enhanced endothelium-platelet interaction induced by hypercholesterolemia mediated by Von

Willebrand factors. Thus thrombolysis due to endothelium platelet activity, ultimately leads to atherosclerotic plaques which considerably decrease the blood vessels lumen resulting in hypertension. Methanolic extract of roots, delayed plasma recalcification time and enhanced the release of lipoprotein lipase enzyme, thus indicating significant antithrombotic activity (Singh and Duggal, 2009).

2. **Manjistha** (*Rubia Cordifolia*)- *Rubia cordifolia* acts as potent blood purifier, antioxidant, diuretic, calcium channel blocker, antiplatelets, anti-inflammatory, antistress etc. Antistress, diuretic, vasodilating properties of *Manjistha* can play an important role in the management of hypertension (Sriramane et al., 2010).

**Mutral Dravyas (Diuretic)-** *Mutral Dravyas* act on hypertension by reducing blood volume level.

1. **Gokshura-** (*Tribulus terrestris*) – *Gokshura* is diuretic and acts as antihypertensive by reducing the intra vascular volume, thus preventing further accumulation of fluid
2. **Punarnava** (*Boerhavia diffusa*) – Due to *Usna Veerya Punarnava* correct the Srotosang. It has anti-inflammatory and diuretic properties.

**Medhya Rasyana** – *Medhya Rasyana* due to its *Medhya, Tridosha Shamka, Nidrajanan, Rasyana & Balya* properties may counteract all *Samprapti Ghataka* of Rakta Dushti and correct *Rasa Rakta Vikshepana Karma* with reduction in *Chala Guna of Vyan Vayu* and decrease the blood pressure.

1. **Bramhi** (*Bacopa monnieri*) possesses cardio tonic and diuretic effect. It is also known to reduce anxiety and blood pressure.
2. **Sarpghandha** (*Rouvolfia serpentina*) – It has anti-adrenergic and antidepressant property and it is a well proven antihypertensive. Its main chemical constituent reserpine one of the 30 alkaloids present in *Sarpghandha* is used in treating hypertension. Reserpine work by controlling nerve impulse along the pathway that affect heart and blood vessels, and thereby lowering the blood volume. It depletes catecholamines and serotonin from the nerve.
3. **Shankhapushpi** (*Convolvulus pluricaulis*) caused persistent fall in the arterial blood pressure.<sup>34</sup> In large doses it produced transient inhibitory effect on both force and contraction of heart muscles. *Shankhapushpi* control the production of stress hormones. Its ethanolic extract has been found to reduce cholesterol, triglycerides and phospholipids. Its stress lowering effect adds to its antihypertensive action (Bhatt and Kushwah, 2013; Murthy *et al.*, 2000; Ila *et al.*, 2013; Agrwal *et al.*, 2000).

#### **Shodhana Chikitsa-**

1. **Virechana Karma** – Treatment of *Raktaprodoshaj Vikar* is *Raktapittahari Kriya & Virekoupavasam*. *Virechana* is the best medicine of *Pitta Dosha*. As *Guna* of *Rakta & Pitta* are same; also incases of *Raktaprodoshaja vikar & Anyonyavarana* (of *Vyana* and *Apana*) *Virechana Karma* is advised in Ayurveda they can be used here for efficient treatment of hypertension. According to the modern point of view, during *Virechana* process the inflammation of intestinal mucosa leads to hyperaemia and exudation resulting into

increased passage of protein rich fluids through vessel walls to intestinal lumen. Increase in fluid volume also results in the dilution of toxic material. Evacuation of the fluid from *Rasa - Rakta* by *Virechana* is the direct process that leads to decrease in fluid volume.

#### **2. Basti-**

The long term regulation of BP occurs through rennin-angiotensin aldosterone axis of endocrine mechanism. Lower part of GIT is richly supplied with parasympathetic nerve which on stimulation with *Basti* may cause decrease in rennin angiotensin aldosterone complex and by activating depressor of vasomotor centre which causes vasodilatation and results in decrease in blood pressure (Indurwade and Biyani, 2000).

#### **3. Siravedha-**

The action of *Siravedha* is not only limited to puncturing site but also show effects on whole body, in hypertension blood-letting leads to reduction in blood volume, thus *Siravedha* is effective in hypertension.

#### **Conclusion**

Estimating the danger posed by constant hypertension overtime on vital organs like brain, heart & kidney it has become a must now to protect the arteries by leading a healthy and active life within the premises drawn by Dinacharya & Ritucharya in Ayurveda. Yoga and Vyayam has become a part of our day to day life in elites class mass. Ayurveda also offers a tone of medication to counter attack hypertension and stabilize body by flushing out the oxidants & modulating body's immune system. Along with combating high blood pressure situation these medications can also protect and regenerate cells of the vital organs against constant arterial pressure.

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