

Review on Hypertension by Herbal Remedies

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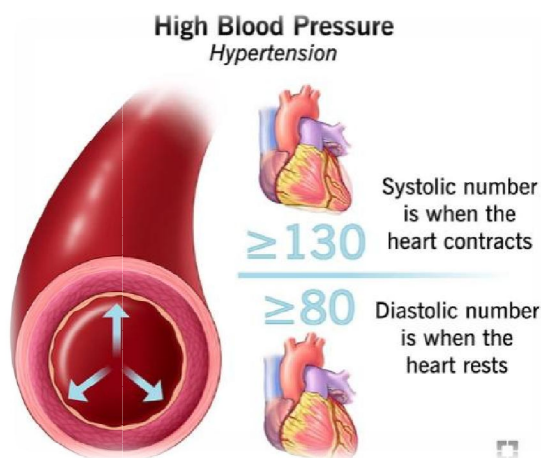
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Abstract: Hypertension (HTN) is the Medical term for high blood pressure. Hypertension is the most common modifiable risk factor for death and disability, including stroke, accelerated coronary atherosclerosis, and systemic atherosclerosis. The use of medicinal plants for the treatment of hypertension has attracted a lot of interest recently. Herbs and plants contain many phytochemicals that have been shown to be effective in the treatment of hypertension and cardiovascular disease. Hypertension is a chronic disorder characterized by persistently high blood pressure of 140/90 mmHg or higher. The use of medicinal herbs to treat hypertension is very common because these medicines are readily available and less expensive than new pharmaceuticals; herbs do not cause side effects, such as weakness, fatigue, cold hands, depression, insomnia, abnormal heartbeats, rash, fever, etc. Every year, more and more studies are done on herbal remedies for high blood pressure. There are many herbal remedies like Punarnava, Barberry, Garlic, Ginger, Ginseng and Arjuna that can be used safely to treat hypertension. Therefore, this article focuses on the various medicinal plants used around the world for the treatment of hypertension rather than drugs. Current literature highlights the causes of hypertension, signs, symptoms, preventive measures and safer treatment options.

Keywords: Hypertension, Target Blood pressure, Herbal effectiveness, Herbal safety, Hypertension management, Antihypertensive agents, Traditional medicines

I. INTRODUCTION

It is frequent disease which is known Hypertension (high blood pressure). It defined as constantly high blood pressure increasing from 140/90mmHg or greater than this.



Hypertension is hemodynamic disorder, associated with elevating in peripheral vascular resistance that can, in turn, lead to myocardial infarction, renal failure, strokes and death if not identified early and not well treated correctly. Cardiovascular and Cerebrovascular ailments majorly cause by High blood pressure. There are often no any symptoms of hypertension and also it can easily go undetected, which is known 'silent killer'. According to world health organization when two consecutive measurements remain $>140/90$ mmHg, it's by hypertension. There are two types of Hypertensions viz systolic and diastolic, graded as a patient blood pressure (BP): grade 1 or mild (BP 140-159/ 90-99mmHg), grade 2 or moderate (160-179/100-109mmHg), and grade 3 and 4 or severe (BP >180 -210/110-139mmHg).

120mmHg. Approximately 75%-80% of the current world's population, including hypertensive patients, use herbal medicine for receptive nature of the body towards herbs, and low incidence of harmful or side effects. The actual cause of High blood pressure is unknown but several risk factors of hypertension such as family history, smoking, extensive use of alcohol, being overweight, high sodium intake, high sugar intake, or lack of physical activity has been linked to cause of hypertension. The popularity of herbal medicine day by day increasing, herbal medicine currently on demand. About 500 plants mentioned in ancient literature with its medical use and around 800 plants have been used in indigenous systems of medicine. Herbs are natural drugs have made great subsidies to industrial medicine formulations, now days herbal medicine have been dropping field to new synthetic drugs advertised by researches and healthcare practitioners to be more efficient and trustworthy and safe. The herbal medicine for utilized for Hypertension treatment like Barberry, Rauwolfia, Garlic, Ginger, Ginger and Arjuna. This review study Highlights the herbs Provan scientifically for the treatment of Hypertension or High blood pressure.

Blood Pressure Ranges

BLOOD PRESSURE CATEGORY	SYSTOLIC (mm Hg)	DIASTOLIC (mm Hg)
Healthy	less than 120	and less than 80
Elevated	120–129	and less than 80
Stage 1 hypertension	130–139	or 80–89
Stage 2 hypertension	140 or higher	or 90 or higher
Hypertension crisis	over 180	or over 120

Classification of blood Ranges

Types of Hypertensions

Primary Hypertension

Primary Hypertension is also known as essential hypertension. In this category of hypertension with most adult. About 90% to 95% of people suffer from primary Hypertension. A specific cause of hypertension by despite years of research isn't known. they thought to be a combination of genetics diet, lifestyle and age, biological factors. Change in your diet and lifestyle can lower your blood pressure and risk of complication from hypertension.

Secondary Hypertension

It is ejective that 5% to 10% of people secondary blood pressure and this is because some inherent ailments like renal damage and muscular disease. In younger people, is more prevalent. The prevalence of secondary hypertension is estimated at 30% among those between the ages of 18 and 40 with hypertension.

Others types of Hypertensions

- Resistant Hypertension
- Malignant Hypertension
- Isolated Hypertension

Causes–

- Boosted production of hormones that retain sodium and vasoconstrictors
- CVD

- Enhancements secretion of renin which results from raised fabrication of angiotensin -2 and aldosterone
- Lack of vasodilators like prostacyclin and nitric oxide
- Genetic disposition
- Enhanced activity of SNS

There are fewer common causes, which also the reason behind Hypertension-

- Brain tumours
- Encephalitis
- Raised intracranial pressure
- Crushing syndrome
- Thyrotoxicosis
- Respiratory acidosis
- Diabetic nephropathy
- Polycystic disease
- Diabetic nephropathy
- Hydronephrosis

Symptoms–

- Exertion
- Headache
- Ears ringing
- Fatigue
- Cardiac palpitations
- Flushed face
- Bleeding of nose
- Urine retention
- Blurred vision

Treatment –

- Central -2 a – adrenergic agonist
- Potassium -sparing diuretics
- Thiazide
- Beta adrenergic
- Alpha -one adrenergic
- Peripheral adrenergic neuronal blocking agent
- Direct-acting vasodilators
- Angiotensin -converting enzyme inhibitors
- Tyrosine hydroxylase enzyme inhibitors

The above medications are used to treat hypertension; however, these medications also have side effects such as fatigue, dehydration, blurred vision, heart rate irregularity, rashes on the skin, etc. In order to manage high blood pressure, study suggested specific lifestyle changes and the use of appropriate natural medications.

Herbal medicine used for the treatment of Hypertension.

Today's commercial medication preparation manufacturing has benefited greatly from the numerous contributions of herbal medicine. The foundation for treating a variety of unique illnesses is herbal medicine derived from plant, animal, and mineral sources.

Nearly 500 plants and their medicinal uses date back to ancient writings, and roughly 800 plants have been used in local medical systems. Natural medications have recently become more and more popular. Many pharmaceutical companies are increasingly concentrating on the manufacture of natural (phytopharmaceutical) medications in order to prevent the negative or negative effects of allopathic medicine. From herbal resources, about 2000 plants with therapeutic qualities and chemical criteria have been identified. Herbs such as garlic (*Allium sativum*), Indian snakeroot (*Rauwolfia serpentina*), cinnamon, black cumin seeds (*Nigella sativa*), ginseng (*Panax ginseng*), Hibiscus sabdariffa (*Rosella*), coatis chinensis (*Barberry*), and *Crataegus* species (*Hawthorns*) are all mentioned in this article.

Why herbal used -

Natural literature as individual herbs and even as ingredients in various formulations, each of these herbs has been found safe by toxicity studies. It has fewer side effects. It is easy to use and available in less costly. Safe to use.

Garlic (*Allium sativum*)



Biological description: -

Synonym - *Allium Sativum*.

Family - Alliaceae or Liliaceae

Part used – Bulbils

Chemical constituents – alliin, ajoene, allylsulfide, dithiin, s-allyl cysteine, which is used as an Antihypertensive drug, is part of the tuber

Several studies have been conducted to examine its usefulness in the treatment of hypertension and hyperlipidaemia. In its report on garlic, the Agency for Research and Quality of Health looked at 37 randomized trials and found that the preparation of garlic minimally decreased total cholesterol. Garlic reduces blood pressure by causing smooth muscle relaxation and vasodilation by activating the production of the endothelium-derived relaxing factor CEDRF, nitric oxide. Clinical research suggests that garlic oil can inhibit CYP2E1 activity by 39%. Garlic oil should be used continuously in patients who take medications metabolized by their enzymes. Regarding the mechanism of the hypotensive effect of garlic, this is attributed to a certain amount of active sulphur. Compounds reported to modulate endothelial relaxation factors, including the stimulation of nitric oxide (NO) and hydrogen sulfide (H₂S) production, the most important of which is allicin and the inhibitor of its effect on the angiotensin-converting enzyme (ACE)), which they all carry. To lower blood pressure. It has minor adverse effect mild gastrointestinal problems.

Indian snakeroot (*Rauwolfia serpentina*)



Biological description: -

Synonym -Dhalwala vitapa, chandramara, sarpasugandha, sarpagandhakhya

Family- Apocynaceae

Part used -Root

Chemical constituents –Reserpine , serpentine, serpentinine, Rawolfinine

Rauwolfia is cultivated for the medicinal use of its 30 alkaloids, especially the reserpine present in the root, widely used in the treatment of hypertension. Its alkaloids work by manipulating nerve impulses and specific pathways that affect the heart and blood vessels and reduce blood pressure and catecholamine and serotonin in the CNS nerves.

Cinnamon



Biological description :-

Synonym – cinnamomum zeylanicum and cinnamon cassia

Family – lauraceae

Chemical constituents –vital oils, cinnamaldehyde, cinnamic acid and cinnamate

A recent study reported the potential effects of two compounds, cinnamic aldehyde and cinnamic acid isolated from *C. cassia* against myocardial ischemia. Regarding the effect of cinnamon on blood pressure, in a meta-analysis including 9 trials, it was reported that cinnamon can significantly decrease SBP and DBP. Numerous reports have documented the many attributes of cinnamon in the form of essential oils and bark, bark powder, phenolic compounds and isolated compounds. In the improvement of personnel health, each attributes plays vital role.

Arjuna bark (Terminalia Arjuna)



Biological description

Synonym – Terminalia Arjuna

Family – Combretaceae

Part used – bark

Chemical constituents – Gallic acid, triterpenoid, saponins, magnesium, ellagic acid, phytosterols, flavonoids, calcium, zinc and copper



Aqueous extract of T. arjuna showed contraction followed by relaxation in isolated rat thoracic aorta. Hypotensive and antiatherogenic properties of the Arjuna plant have been reported in various studies. The hypotensive effect was mainly due to the blocking action of the autonomic ganglia, and a depressant action on the higher brain centres also contributed to the hypotension. Water-soluble fractions of a 70% alcoholic (dry) extract of T. arjuna have been reported to produce dose-dependent hypotension and a decrease in heart rate.

Arjuna bark is used in the treatment of various diseases, such as heart diseases, including coronary heart disease (CAD), hypertension, CHF (congestive heart failure), stable angina and causes the reduction of systolic blood pressure. Black cumin seeds (*Nigella sativa*)

Black Cumin Seeds (*Nigella Sativa*)



Biological description

Synonym – *Nigella sativa*

Family –Ranunculaceae

Part used – seed

Chemical constituents – thymoquinone, dithymoquinone, thymohydroquinone, thymol, carvacrol, tanethale and 4-terpineol

It has been used as a diuretic and hypotensive agent for a very long time. The hypotensive effect of these seeds is due to the fact that their essential oils are effective antihypertensive agents with central action. It has antioxidant properties, so it is used in some treatments for heart diseases. The antihypertensive potential of *N. sativa* is analysed in this review. The main active components of *N. sativa* include thymoquinone (TQ), thymohydroquinone (THQ), Di thymoquinone, d-limonene, d-citronellol, p-cymenine and 2-(2-methoxypropyl)-5-methyl-1,4-benzenediol. Taking black cumin powder or black cumin oil by mouth can slightly lower blood pressure in healthy adults.

Ginseng (*Panax Ginseng*)

Biological description

Synonym – *panax ginseng*

Family – Araliaceae

Part used – root

Chemical constituents – ginsenoside

others-Adaptogen, pherodisiac, stimulant

It is a very common plant grown in China, but is now also found in Japan, Korea and North America. Rg1, one of the active ingredients in ginseng, can stimulate the production and release of nitric oxide from endothelial cells. Another ingredient, ginsenoside, reduces blood pressure and acts as a central nervous system depressant.

It also interferes with platelet aggregation and coagulation. It shows a peripheral vasoconstrictor effect at low doses of ginseng extracts and peripheral vasodilation at high doses. However, in cerebral and coronary vessels, it only shows a vasodilator effect resulting in cerebral and coronary blood flow.

Hibiscus sabdariffa (Rosella)



Biological description

Synonym –Hibiscus sabdariffa

Family – malvaceous

Part used –calyces

Chemical constituents – oxalic, malic, citric, tarteric and hibiscus acid

Hibiscus, popularly known as Rosella, is a popular remedy used for fever, hypertension and other diseases. Hibiscus tea included in food can lower blood pressure in hypertensive subjects. The antihypertensive effects of H. sabdariffa have been attributed to increased NO₂ production, Ca²⁺ channel inhibition and K⁺ (ATP) channel opening. Hibiscus sabdariffa, also known as sour tea, can help lower blood pressure. Some studies have shown that hibiscus sabdariffa can reduce blood pressure in people with stage 1 hypertension. Other studies have shown that hibiscus sabdariffa extracts can reduce plasma levels of angiotensin II, ACE and aldosterone.

Mechanisms: -

Hibiscus sabdariffa can reduce blood pressure due to its vasodilator activity, diuretic effectiveness and ability to lower heart rate.

Hawthorne (Crataegus)



Biological description

Synonym –Crataegus loevigata

Family – Rosaceae

Part used –dried flowers, fruits, leaves

Chemical constituents –Flavonoids, catechins, triterpene, saponins, amines and oligomeric procyanidins (opcs)

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It has been traditionally used for cardiovascular disease in many cultures. Hawthorn contains a number of active compounds, triterpene saponins, amines and oligomeric proanthocyanidins (OPCS). It has been found to exert a moderate blood pressure effect that can take up to four weeks to achieve maximum results. Hawthorne lowers blood pressure by dilating the coronary arteries. Hawthorn extract and hyper saccharide have a hypotensive effect in spontaneously hypertensive rats through targets related to bile acids and inflammation. Therefore, hawthorn extract has the potential to become a functional food or an alternative therapy for hypertension.

II. CONCLUSION

Hypertension is a hemodynamic disorder. This is due to an increase in normal blood pressure (if the systolic pressure is greater than 120 mmHg or the diastolic pressure is greater than 80 mmHg). Hypertension can cause myocardial infarction, kidney failure, stroke and death if not identified early and treated effectively. To overcome this disease, we, for example, changing our lifestyle, our diet with healthy and low-fat foods, doing daily exercises and avoiding smoking and alcohol, do not stress. Diet and lifestyle changes can help lower blood pressure and can reduce, or sometimes eliminate, the need for medication. As you change your diet, continue to work closely with your healthcare professional to manage changes in your medications. Fruits and vegetables are rich in potassium, which helps lower blood pressure. Plant foods are generally low in fat and sodium and contain no cholesterol. Adding natural herbs to the diet and using them as medicine and managing them will help lower blood pressure. Taking supplements such as magnesium, omega-3 fatty acids, potassium CoQ10, taurine and vitamins B and C have been used effectively in the treatment of cardiovascular diseases including hypertension. And the natural herbs mentioned above have been found to be effective against blood pressure and other cardiovascular diseases.

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