



## Review Article

## Herbal treatment of hypertension: Literature review

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## ABSTRACT

Hypertension becomes the main reason behind various deaths. About twenty percent of the American population are suffering from hypertension & 1/3<sup>rd</sup> of these Americans are unaware that they are hypertensive. Consequently, hypertension is sometimes known as a silent killer as well. Hypertension is mostly without any symptoms till the destructive consequences of high blood pressure like myocardial infarction, stroke, renal disorders & visual issues detected. It's a major risk factor that describes the heart attacks and coronary artery disease which sometimes need coronary artery bypass surgery. High blood is defined as constantly high bp increasing from 140/90 mmHG or even more than this, nowadays it's a very common problem faced by almost everyone & almost billions of dollars are consumed every year to investigate the cardiovascular ailments and may dollars are utilized for their medication as well. Because high blood pressure majorly causes cardiovascular & cerebrovascular ailments. Recently, Traditional medicine has managed little to decrease the patient ratio with this dangerous ailment. Natural remedies provide very useful ways to reduce the increasing patient ratio with hypertension. Taking Supplements such as, magnesium, omega3 fatty acids, CoQ10, potassium, amino acids & taurine, and vitamins C and E have been efficiently utilized in dealing with cardiovascular ailments involving hypertension. And these above-mentioned natural herbs prove to be effective against blood pressure and other cardiovascular ailments. This review highlight the herbs proved scientifically for the treatment of hypertension.

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## 1. Introduction

High blood pressure is a frequent disease which is known as Hypertension. Which is defined as constantly high bp increasing from 140/90 mmHG or even more than this (Pradeep Singh et al.,2015).<sup>1</sup> Nowadays it's a very common problem faced by almost everyone & almost billions of dollars are consumed every year to investigate cardiovascular ailments and many dollars are utilized for their medication as well (Manish Agrawal et al.,2010).<sup>2</sup>

Because high blood pressure majorly causes cardiovascular & cerebrovascular ailments (Xingjiang Xiong et al.,2013).<sup>3</sup> Consequently, hypertension is sometimes known as the silent killer as well. Hypertension is mostly without any symptoms till the destructive consequences of high blood pressure like, myocardial infarction, stroke, renal disorders & visual issues are detected. It is a major risk factor that detects the heart attacks and coronary artery disease which sometimes need coronary artery bypass surgery (Jawaid Talha et al., 2011).<sup>4</sup> For almost the previous two years various researchers either they are international or

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national both are agreed on the medicinal standards of hypertension & significant advancement has been made in the field of medicine used for hypertension treatment. Antihypertensive medicine which is taken orally proves as momentous against hypertension. Still, the blood pressure standard for patients suffering from hypertension is far from acceptable. The study of Chinese natural medicine for the treatment of hypertension has gotten much research awareness (Xingjiang Xiong et al.,2013).<sup>3</sup>

Recently, Traditional medicine has managed little to decrease the patient ratio with this dangerous ailment. Natural remedies provide very useful ways to reduce the increasing patient ratio with hypertension. According to research, many ways that are successful for the treatment of high blood pressure and are diet, exercise, stress, management, supplements & herbs. Annually, many investigations have been done on natural medications for the cure of high blood pressure (Manish Agrawal et al.,2010).<sup>2</sup> Natural drugs have made great subsidies to industrial medicine formulations assembled now a days traditional medicines have been dropping field to new synthetic drugs advertised by researchers & health care practitioners to be more efficient & trustworthy (Jawaid Talha et al.,2011).<sup>4</sup> So, there are many natural plants utilized for its treatment such as; Barberry, Garlic, Ginger, Ginseng & Arjuna which can carefully utilized as medicines for hypertension (Manish Agrawal et al.,2010).<sup>2</sup>

## 2. Types of Hypertension

### 2.1. Primary hypertension

About ninety-to-ninety five percent of people suffer from primary hypertension which is also called as essential hypertension; has no particular triggers thus it is the reason behind high volume of blood (Mayo Foundation for Medical Education and Research, 2008).

### 2.2. Secondary hypertension

It is estimated that 5-10 percent of people have secondary blood pressure and this is because of some inherent ailments such as due to renal damage & muscular diseases because these ailments have the consequences on kidneys arteries & endocrine system of the body (Secondary hypertension, Mayo Foundation for Medical Education and Research, 2008).<sup>5</sup>

#### 2.2.1. Causes

These are the main causes of high blood volume;

1. CVD (Jawaid Talha et al.,2011)<sup>4</sup>
2. Enhanced activity of the SNS
3. Boosted production of hormones that retains sodium & vasoconstrictors
4. Lack of vasodilators like prostacyclin & nitric oxide

5. Improper & enhanced secretion of renin which results from raised fabrication of angiotensin-II & aldosterone.
6. Genetic disposition (Kaplan NM, 2002)<sup>6</sup> (Reddy KS, 1996).<sup>7</sup>

These under mentioned causes are also the reason behind Hypertension, but they are less common

1. Cushing syndrome
2. Raised intracranial pressure
3. Brain tumors
4. Encephalitis
5. Respiratory acidosis
6. Thyrotoxicosis
7. Congenital adrenal hyperplasia
8. Polycystic disease
9. Diabetic nephropathy
10. Hydronephrosis (Kaplan NM, 2002)<sup>6</sup> (Reddy KS, 1996).<sup>7</sup>

#### 2.2.2. Symptoms

Here are the main signs and symptoms of this disease;

1. Headaches
2. Exertion
3. Ears ringing
4. Fatigue
5. Cardiac palpitations
6. Flushed face
7. Bleeding of the nose
8. Urine retention
9. Blurred vision
10. dizziness (<http://www.vitapharmica.com/benefits.html>)

#### 2.3. Treatment

There are different types of treatment and many drugs are available on the market including:

Central alpha 2 adrenergic agonists, potassium-sparing diuretics, Thiazide, beta adrenergic,  $\alpha 1/\beta$ -adrenergic antagonists Peripheral  $\alpha 1$ -adrenergic antagonists, Peripheral adrenergic neuronal blocking agents, Central adrenergic neuronal-blocking agents, Direct-acting vasodilators, Angiotensin-converting enzyme inhibitors, Calcium antagonists, Tyrosine hydroxylase inhibitors, Angiotensin II receptor antagonists

All these above-mentioned medicines are utilized as medication for hypertension but these medicines have side effects as well for example the drugs which are act as diuretics can cause muscular twinges, vertigo, fatigue, water deficiency, blurred vision, and heart rate becomes irregular, rashes on the skin, etc. Angiotensin-converting enzyme inhibitors also caused side effects like it causes, kidney failure cough, vomiting, fever, diarrhea, sore throat,

skin rash etc. Calcium channels become the reason behind these below-mentioned side effects as well as tiredness, headache, diarrhea, constipation, and edema. So, research recommended distinct modifications in lifestyle & usage of suitable natural medicine for the management of high blood pressure.

So, here are the lifestyle modifications that help to reduce high blood pressure.

1. Reduction in stress
2. Reduce the intake of alcohol
3. Do workout daily
4. Reduce the intake of salt
5. Good dietary habits
6. Termination of smoking
7. Utilization of suitable natural medicine (Bauer JH & Reams GP, 1995).<sup>8</sup>

### 3. Herbal Medicine used for the Treatment of Hypertension

Goods that come from plant, animal & mineral sources provide the basis for the treatment of various distinct ailments. According to the recent approximation, almost eighty percent of people from progressing countries depend upon natural herbs for their treatment of distinct ailments. And these natural herbs come from different plants & animal types. Natural drugs are recently in need & their acceptance is rising progressively. Almost five hundred plants along with their medicinal utilization are stated in ancient writing & about eight hundred plants have been utilized in local systems of medicine (Conlin PR et al.2000)<sup>9</sup>.

Need for natural products rising gradually in western countries as well, due to the bad effects of allopathic medicine. Therefore, several companies that make medicine are now focusing on the synthesis of natural (Phytopharmaceutical) drugs (Chopra RN et al.,1956)<sup>10</sup>. Almost twenty thousand plants have been documented which have medicinal properties. Chemical standards from herbal resources have become easier & have influenced substantially the improvement of new medicine from plants that have medicinal properties<sup>8,9</sup> (P. A. Cox, 1990)<sup>11</sup> (Richard C & Jurgens M, 2005).<sup>12</sup> Many natural drugs have been utilized as medicine for the treatment of hypertension some of them are explained below;

#### 3.1. Arjuna bark (*Terminalia arjuna*)

It is a deciduous plant observed all over India. Its part which is utilized as a drug for the treatment of distinct ailments is its bark & it is used for almost 3 eras. Its chemical components consist of, gallic acid, triterpenoid saponins, magnesium, ellagic acid, phytosterols, flavonoids, calcium, zinc & copper (Singh N et al.,1982).<sup>13</sup> It is used in the treatment of distinct ailments such as heart diseases

including, coronary artery diseases (CAD), hypertension, CHF (congestive heart failure) stable Angina & causes a reduction in systolic blood pressure (Dwivedi S & Agarwal MP, 1994)<sup>14</sup>. It has no hepatic, kidney failure & hematological side effects (Dwivedi S & Jauhari R, 1997).<sup>15</sup>

#### 3.2. Hawthorne

It is conventionally utilized for heart diseases. Its main components consist of flavonoids, catechins, triterpene saponins & amines. It works in the reduction of blood pressure (Leuchtgens H, 1993).<sup>16</sup> And it decreases the blood pressure by expanding the coronary artery (Schussler M et al.,1995).<sup>17</sup>

#### 3.3. Black cumin seed (*Nigella sativa*)

It is used as a diuretic and blood pressure-lowering agent for a very long time. During an in vivo study, it was noticed that its 0.6 mL/kg/day extract & frusemide dosage of 5 mg/kg/day has the diuretic effects as it increased the diuresis by sixteen to thirty percent after fifteen days of its medication correspondingly. (Zaoui A et al., 2000).<sup>18</sup> It has an antioxidant property therefore it is utilized in several cardiac diseases treatment its chemical components consist of thymoquinone, thymol 32, carvacrol, t- anethole & 4-terpineol( Ghosheh OA et al.,1999).<sup>19</sup> The blood pressure-lowering effect of these seeds is because of their essential oils. Because in-vivo studies reveal that essential oils are the effective & centrally acting antihypertensive agent (Tahir KE et al.,1993).<sup>20</sup>

#### 3.4. *Rauwolfia serpentina*

It is the most important herb which has medicinal properties due to its alkaloids which are almost thirty in number. Reserpine is the most important chemical constituent that is present in its root this active agent helps to reduce blood pressure and is also helpful in the treatment of various other heart diseases (Duke JA, 1985)<sup>21</sup>. And the constituents who are used for these purposes are ajmaline, rescinnamine, serpentinine and sarpagine. Its alkaloids work through manipulating nerve impulses along with particular pathways that affect cardiac & vessels carrying blood & reduce blood pressure as well. It also reduces catecholamines & serotonin from nerves in CNS (Obayashi k et al.,1976).<sup>22</sup>

#### 3.5. Ginseng

It is a very common plant basically cultivated in China but now it is also present in Japan, Korea & North America. It is generally utilized as an adaptogenic representative for tiredness, lack of sleep, anxiety stress & acts as an immunity booster as well. It enhances the stress on towards environment as well (Attele AS et al.,1999).<sup>23</sup> Ginseng is utilized to develop somatic & muscular concerts, improving

cognitive functions like focus & memory. Its chemical constituents mainly consist of ginsenoside & saponins. It may use as single drug or with the combination of other plant in the form of poly herbal formulation (Vuksan V et al.,2000).<sup>24</sup>

### 3.6. *Ginkgo biloba*

*Ginkgo biloba* mainly use for brain its part used are fruit & leaves which are utilized for the treatment of dementia, involving, vascular mixed dementia & Alzheimer's. The leaf of *Ginkgo* is also utilized for conditions linked with cerebral vascular inadequacy, particularly in elders, involving loss of memory, headache, vertigo, dizziness, focus disability & hearing diseases as well (Le Bars PL et al.,1997)<sup>25</sup>. It is utilized orally for the treatment of ischemic stroke. It is utilized for cognitive disorders secondary to depression & to recover sleep patterns in patients with anxiety, depression & chronic fatigue syndrome also treats eye problems, involving muscular degeneration & glaucoma & attention deficit-hyperactivity disorder (Jung F et al., 1990)<sup>26</sup> thrombosis, heart disease, arteriosclerosis & angina pectoris. Its chemical constituents consist of flavonoids & glycosides. It is used in the form of poly herbal formulation or it is used single as well. *Ginkgo* is marketed either as a single herb compound or in combination with other herbs (Maitra et al.,1995).<sup>27</sup>

### 3.7. *Allium sativum*

Its basic part used is its bulb and it is utilized against various diseases for example it is utilized against hypertension, hyperlipidemia, atherosclerosis, and utilized in mensural diseases as well. Its leading chemical components consist of allicin, ajoene & organosulfur compounds like S- allyl-cysteine. Fresh garlic holds almost 1% alliin (Siegel G et al., 1999)<sup>28</sup>. Garlic decreases hypertension by triggering smooth muscle easing and vasodilation (Apitz-Castro R et al., 1986).<sup>29</sup>

## 4. Conclusion

Hypertension is a life-threatening disease which becomes the main cause of death these days so, to overcome this disease we have to take some beneficial steps, for example, modifying our lifestyle involving taking a healthy and low-fat diet do exercise daily, don't take stress, avoiding cigarette smoking and alcohol taking and adding these natural herbs to diet and use as a medicine as well all these management will help to reduce blood pressure. By taking Supplements such as, magnesium, omega 3 fatty acids, potassium CoQ10 & taurine, and vitaming]]s B and C have been efficiently utilized in dealing with cardiovascular ailments involving hypertension. And these above-mentioned natural herbs prove to be effective against blood pressure and other cardiovascular ailments.

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None.

## 6. Conflict of Interest

None.

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