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A REVIEW ON TREATMENT OF HYPERTENSION BY USING PHYTOMEDICINE

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ABSTRACT

Hypertension is a chronic disorder characterized by a persistently elevated blood pressure exceeding 140/90 mmHg or greater. In response to the increased popularity and greater demand for medicinal plants, a number of conservation groups are recommending that wild medicinal plants be brought into cultivation. Green Tea is one of the most ancient and popular therapeutic beverages consumed around the world. This product is made from the leaf of the plant called “Camellia sinensis”. It can be prepared as a drink, which can have many systemic health effects or an “extract” can be made from the leaves to use as medicine. Green tea is reported to contain thousands of bioactive ingredients which are almost contributed by polyphenols which plays a key role in prevention and treatment of many diseases. The aim of this literature review was to illustrate therapeutic properties of the plant “Green tea”. Garlic Allium sativum the Liliaceae family, is among the oldest of all cultivated plants. It has been used as a medicinal agent for thousands of years. Garlic is one of the most important bulb vegetables, which is used as spice and flavoring agent for foods Garlic adds to taste of foods as well as it helps to make them digestible. Garlic contains different useful minerals, vitamins and many other substances used for health of human beings. It is rich in sugar, protein, fat, calcium, potassium, phosphorous, sulfur, iodine fiber and silicon in addition to vitamins. It possesses high nutritive value. Furthermore, garlic has pharmaceutical effects and used to cure a vast conditions including blood pressure

and cholesterol, cancer, hepatoprotective, anthelmintics, anti-inflammatory, antioxidant, antifungal and wound healing, asthma, arthritis, sciatica, lumbago, backache, bronchitis, chronic fever, tuberculosis, rhinitis, malaria, obstinate skin disease including leprosy, leucoderma, discoloration of the skin and itches, indigestion, colic pain, enlargement of spleen, piles, fistula, fracture of bone, gout, urinary diseases, diabetes, kidney stone, anemia, jaundice, epilepsy, cataract and night blindness. Garlic products are used as sources of medicine in many ways in human beings in their day today life.

KEYWORDS: Hypertension, Primary and Secondary hypertension, Medicinal plant.

INTRODUCTION

According to WHO hypertension elevated blood pressure levels is to 140/ 90 mmhg.[1] Its other name is ‘silent killer’ as it is asymptomatic and the major contributor or risk factor to cardiovascular mobility and morbidity.[2] In 2000, 26.4% of the word population is suffered to hypertension and this is predicted that rate world increased by 65% in 2025.[3]

Types of hypertension:- Hypertension is manly divided in two types

a. have specific cause which may contribute to increase in blood pressure.

b. **Secondary hypertension (5-10%):-** It is caused by underlying medical conditions such as kidney damage, pheochromocytoma, muscle disease that affect the kidneys, arteries, heart or endocrine system.[4] Cardiovascular disease is a major health problem in **Primary or essential hypertension (90-95%)**:- Primary hypertension is no India. Hypertension (BP) is a major risk factor and better management could prevent her 300,000 out of 1.5 million cardiovascular disease deaths per year in India. Treatment non-adherence is a major public health problem and one of the most important unsolved problems in the management of hypertension.[5] Plants that contain in one or more of their organs substances that can be used for therapeutic purposes or that are precursors for the synthesis of useful medicinal products[6] can be called medicinal plants. Hypertension treatments include angiotensin-converting enzyme inhibitors, angiotensin II receptor antagonists, alpha-blockers, beta-blockers, calcium channel blockers, diuretics, direct renin inhibitors, vasodilators, dry cough, dizziness, Side effects include ankle swelling, fatigue, depression, and insomnia., impotence, palpitations, slow heart rate, constipation, dysgeusia, headache, gout, kidney damage (rare). There is ample scientific evidence that using carefully selected herbal remedies and dietary supplements lowers blood pressure

and improves overall heart, arterial and cardiovascular function. is a dietary supplement that not only helps cure major ailments, but also calms other body systems.

• Natural remedies are relatively cheaper than modern treatments and cures.

• Complementary therapies are readily available.

• Unlike allopathic, naturopathic and traditional medicines, herbs, vegetables and fruits have no unwanted or undesirable side effects.

Causes of hypertension:-[7,8] There is various causes of hypertension are discussed in table.

Table no 1: Various cause of hypertension.

Hypertension type	Cause
Primary hypertension (essential hypertension)	Increased sympathetic nervous system activity. Increased production of sodium-retaining hormones and vasoconstrictors. Deficiencies of vasodilators such as prostacyclin and nitric oxide. Inappropriate or increased renin secretion, resulting in increased production of angiotensin-II and aldosterone. Genetic predisposition.
Secondary hypertension	**Renal:-** Acute glomerulonephritis, chronic nephritis, polycystic disease, diabetic nephropathy and hydronephrosis **Endocrine:-** Acromegaly, Hypothyroidism, Hyperthyroidism, Hypocalcaemia (hyperparathyroidism) **Adrenal:-** **Cortical:-** Cushing syndrome, primary aldosterone's, congenital adrenal hyperplasia, apparent mineralocorticoid excess (liquor ice) **Medullary:-** Phaeochromocytoma, Extra-adrenal chromaffin tumors, Carcinoid **Exogenoushormones:-** estrogen, glucocorticoids, mineralocorticoids, sympathomimetic, tyramine- containing food, monoamine oxidase inhibitors **Systolic hypertension:-** Increased cardiac output Aortic valvular insufficiency, Arteriovenous fistula, patent ductus arteriosus Thyrotoxicosis, Rigidity of aorta Iatrogenic hypertension **Pregnancy-induced hypertension** **Neurological disorders:-** Increased intracranial pressure – brain tumors – encephalitis – respiratory acidosis

Signs and symptom

Symptoms of high blood pressure include headache, shortness of breath after exertion, tinnitus, fatigue, heart palpitations, flushing, nosebleeds, frequent urination, blurred vision, and dizziness.

Why herbal medicine used for treating hypertension[9]

Thiazide, loop and potassium-sparing diuretic, central alpha-2 adrenergic agonist, beta-adrenergic and alpha-1/beta-adrenergic antagonist, peripheral alpha-1-adrenergic antagonist (therapeutic), peripheral adrenergic neuron blocker, central/ Peripheral adrenergic neuron blockers, direct-acting vasodilators (therapeutic agents), angiotensin-converting enzyme inhibitors (therapeutic agents), calcium channel blockers (therapeutic agents), tyrosine hydroxylase inhibitors, angiotensin II receptor blockers (therapeutic). However, these drugs have side effects such as diuretics that can cause muscle cramps, dizziness, extreme fatigue, dehydration, blurred vision, abnormal heart rate, skin rashes, and more. Side effects include cough, rash, vomiting, renal failure, fever, sore throat, and diarrhea. Side effects associated with the use of calcium channel blockers include fatigue, headache, diarrhea, constipation, rash, and edema. Scientific research therefore suggests a variety of lifestyle changes and the use of appropriate herbal medicines in the management of hypertension. These various lifestyle changes include reducing stress, limiting alcohol consumption, exercising regularly, limiting salt intake, eating right, smoking cessation, and using appropriate herbs., fatigue, drowsiness, impotence, cold hands and feet, depression, insomnia, irregular heartbeat, rash, dry mouth, dry cough, stuffy nose, headache, dizziness, swelling around the eyes, constipation or diarrhea, fever or anemia alone , related to pressure drugs. 100% natural herbs are absolutely safe.

Treatment with herbal remedies:- Many medicinal plant is used to treatment of hypertension.

Plant name	Ayurveda/common name	Part used	Antihypertensive & other beneficial effects	REFERANCE
Allium sativum	Garlic	Fruit	Antihypertensive, Vasopressor	[10]
Camellia Sinensis	Green Tea	Leaves	Antihypertensive	[23]
Tropaeolum majus	Indian Grass	Seed, leaf, flower	Antihypertensive	[11]
Lepidium sativum	Garden cress	Leaves	Antihypertensive, Diuretic	[12]
Laelia autumnalis	Autumn Flowering Laelia	Roots	Antihypertensive, Vasorelaxant	[13]
Carom capticum	Ajvan	Leaves	Antihypertensive, Antispasmodic	[14]
Oleo europaea	Olive tree	Leaves	Antihypertensive, Hypoglycemic, Antioxidant	[15]
Tribulus terrestris	Tribulus	Leaves	Antihypertensive, Vasodilator	[16]

Mesona procumbens	Vanilla	Seed	Antihypertensive	[17]
Eucommia ulmoides	Eucommi Bark	Leaves	Antihypertensive	[18]
Phyllanthus urinaria	Bhuiaonla	Fruit, leaf, flower	Antihypertensive, Anti-inflammatory	[19]
Elettaria cardamomum	Cardamom	Fruit	Antihypertensive	[20]
Agastache Mexicana	Mexican Giant Hyssop	Bark	Antihypertensive	[21]

A brief description of anti- hypertensive plant

1. Camellia Sinensis (Green Tea)

Scientific Classification

Kingdom: Plantae

Order: Ericales

Family: Theaceae

Genus: Camellia

Species: C. Sinensis

Binomial name: Camellia Sinensis (L.) Kuntze

1.1 Plant Description[22]

Chinese Camellia Sinensis is native to mainland China, South and Southeast Asia, but is now cultivated in tropical and subtropical regions around the world. An evergreen shrub or small tree, when grown for its foliage, he is usually trimmed to less than 2 meters (6 ft). It has a strong taproot. The flowers are yellowish white, 2.5-4 cm in diameter, and have 7-8 petals. Camellia Sinensis and Camellia oleifera seeds can be pressed into tea oil, a sweet-smelling and edible oil that should not be confused with tea tree oil. The leaves are 4-15 cm long and 2-5 cm broad. The young light green leaves are preferably harvested for tea production; they have short white hairs on the underside. Older leaves are deeper green. Different leaf ages produce differing tea qualities, since their chemical compositions are different. Usually, the tip (bud)) and the first two to three leaves are harvested for processing. This manual harvest is repeated every one to two weeks.

Leaf Of Camilla Sinensis.

Fruit Of Camilla Sinensi.

1.2 Chemical Constituents

Tea is reported to contain about 4000 bioactive compounds, one-third of which are derived from polyphenes. Other compounds include alkaloids (caffeine, theophy.je, and theobromine), amino acids, carbohydrates, proteins, chlorophyll, volatile organic compounds (chemicals that readily produce smoke and contribute to tea aroma), compounds, aluminum, minerals, and traces. The polyphenols found in tea are primarily flavonoids. Polyphenols, a large group of phytochemicals including catechins, are traditionally thought to be responsible for the health benefits attributed to tea, especially green tea. Important catechins are (-) epicatechin gallate (ECG), (-) epicatechin (EC), (epigallocatechin (EGC), and (-)

epigallocatechin gallate (EGCG) (Figure 2). Black tea has much lower concentrations of these catechins than green tea Oolong tea contains a mixture of simple and complex polyphenols such as catechins. Black, green, and oolong teas are all very good sources of vitamin C.

1.3 Medicinal Properties and Pharmacology

According to the free radical theory of aging. Increased formation of free radicals and oxidative stress underlie the phenotypic changes that lead to age-related functional decline and neurodegeneration. Several age-related diseases such as cancer, Parkinson's disease, Alzheimer's disease, cardiovascular disease, and diabetes have causes associated with changes in oxidant/antioxidant balance and free radical damage reported that green tea as the sole source of liquid did not significantly extend the lifespan of mice compared with controls. However, green tea protected against ethanol-induced oxidative stress in aged mice and prevented oxidative damage to serum lipids and proteins produced by ethanol and exacerbated by aging.

2. Allium sativum(Garlic)

Scientific Classification

Kingdom : Plantae

Subkingdom : Tracheobionta

Superdivision : Spermatophyta

Division : Magnoliophyta

Class : Equisetopsida

Subclass : Magnoliidae

Superorder : Lilianae

Order : Asparagales

Family : Amaryllidaceae

Genus : Allium

2.1 Plant Description[23]

Other members of the Onion genus are A. cepa (onion), A. schoenoprasum (chives), A. ascalonicum (shallot), and A. porrum (leek). Allium sativum is further divided into two subspecies, A. sativum var. sativum (also known as softneck garlic) and Allium sativum var. ophioscorodon (also known as hardneck garlic). Both varieties consist of an underground bulb composed of cloves, which are encased in a dry membranous membrane and held

together by a basal lamina. Variations differ in that the hard-necked garlic bulb consists of 6 to 11 cloves arranged around a woody stem in the center of the. This type of garlic has a curled skin on top, which is generally removed after one to three curls. This is because as it continues to grow, less energy is available for the bulb. Eventually, the flower stalk will produce a bulb containing miniature carnations. Bulbs are occasionally accompanied by white or mauve flowers, but these are sterile. Softneck garlic has spikeless spikes and contains up to 24 cloves per bulb. The stem is central and soft, hence the name. cloves are layered, with larger cloves on the outside. Allium sativum is the more common cultivar, and although many studies on garlic do not specify which subspecies are used, chemical and biological effects are thought to be similar. Because Allium sativum is sterile, it grows asexually from carnations that do not require pollinators. The Hardneck strain, which thrives best in warm climates, adapts better to colder climates. Allium sativum, like most members of the genus, is a perennial species. As explained in the section titled Chemistry and Pharmacology, garlic is composed of very potent organosulfur compounds that act as secondary metabolites. These compounds are responsible for the highly pungent odor and taste of raw garlic and act as a defense against predators (Block 2010)

Fruit Of Allium Satavium (Garlic)

2.2 Chemical Constituents

Manipulating garlic to create alternative forms reacts with labile sulfur compounds and changes active chemical constituents. It is important to note that these chemical alterations may alter the bioavailability of his compounds. Unfortunately, many studies did not specify the actions taken, which may explain the discrepancies in reported data. Garlic, traditionally

used in its raw form, is now often heated, dehydrated and aged. Only freshly pressed garlic contains hydrogen sulfide, which is a notable vasodilator. suspected to have cardioprotective effects. Garlic powder can be produced by thermal dehydration of plants, but when garlic is exposed to high temperatures, alliinase is deactivated and unable to react with alliin to form allicin. This explains why cooked garlic has a milder flavor than raw garlic. If you freeze clove before powdering it, the powder may contain allicin. Acetone removes water and alliin and alliinase remain separated until water is added, at which point allicin is formed. Dehydration during the milling process does not destroy alliinase like heat does, but more than half of the alliin is lost. Although levels are lower than fresh garlic, dried garlic contains alliin and alliinase as explained above. Alliinase is inactivated by the acidic environment of the stomach. Freeman and Kodera (1995) also reached this conclusion by subjecting his dried garlic powder to simulations of his gastrointestinal fluids. Allicin production was reduced by 99%, probably due to a shortage of allinase. This suggests that it may be beneficial for to further investigate the effects of dry garlic powder if he ingests in capsules that are enterically coated to protect against stomach acid. increase. These studies also show that manipulating the shape of garlic alters the active ingredients, which can lead to discrepancies in the data in studies. It can also be aged by extracting and concentrating. When -allysin is dissolved in oil, the major compound in the end product is S-allylcysteine (SAC), but the most stable component of garlic, ajoene, is also present. Suggested that SAC passes through the gastrointestinal tract without degradation and that is well absorbed. Also suggested that SAC may be stable in blood, whereas allicin is unstable in blood and cannot reach target organs via circulation.

2.3 Pharmacological activities

Due to the biologically active component allicin and its derivatives, garlic is used as a drug to treat a wide range of diseases and conditions related to the heart and blood system, including high blood pressure, high cholesterol, and coronary arteries., heart attack, hardening of the arteries" (atherosclerosis). Amagase noted that garlic is used to prevent various types of cancer, including colon, rectal, stomach, breast, prostate, bladder and lung cancer. Anti hyperlipidemia, antihypertensive, anti atherosclerosis, benign prostatic hyperplasia (BPH), diabetes, osteoarthritis, hay fever (allergy) It is also used to treat cardiovascular diseases such as rhinitis), traveler's diarrhea, and hypertension. Pressure Blood pressure in late pregnancy (pre-eclampsia), colds, flu. It also strengthens the immune system, prevents tick bites, and is used to prevent and treat types of bacterial and fungal infections. Lists his medicinal

properties of garlic. Fever, cough, headache, abdominal pain, nasal congestion, gout, rheumatism, hemorrhoids, asthma, bronchitis, shortness of breath, low blood pressure, low blood sugar, high blood sugar, snake bites. Also fights stress and fatigue and promotes healthy liver function. Discoloration and itching, dyspepsia, colic, splenic enlargement, hemorrhoids, fistulas, bone fractures, gout, urinary tract disorders, diabetes, kidney stones., anemia, jaundice, epilepsy, cataracts, night blindness. Garlic plays an important role in the pharmaceutical field and is used to treat cardiovascular disease and other causes of death, such as.

CONCLUSIONS

Human studies suggest that green tea may contribute to a reduction in the risk of cardiovascular disease and some forms of cancer, as well as to the promotion of oral health and other physiological functions such as antihypertensive effect, body weight control, antibacterial and antiviruses activity, bone mineral density increase, ant fibrotic properties and neuroprotective power. Increasing interest in its health benefits has led to the inclusion of green tea in the group of beverages with functional properties. Other traditional uses of green tea include treating flatulence (gas), regulating body temperature and blood sugar, promoting digestion and improving mental processes. As an herbal remedy, green tea is often recommended to ease stomach discomfort, vomiting and to stop diarrhea. The authors acknowledge the inspired provided by Dr. Alhaj Hakim Md. Yousuf Harun Bhuyan, honorable chief mutaowalli & managing director, Hamdard Laboratories (Waqf) Bangladesh, Kazi Mansur-Ul-Huq, Honorable Chairman, Managing Committee, Hakim Said Eastern Medical College & Hospital and Director Information and Public Relation - Hamdard Bangladesh and Lt. Colonel Mahbubul Alam Chowdhury (Ret:), Honorable Director, Hamdard Foundation Bangladesh, for the preparation of this manuscript.

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