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Medicinal plants used in the management hypertensions

Abstract

Hypertension or high blood pressure (BP) is a chronic medical condition and is a worldwide epidemic. High percentage of the world hypertensive population use herbal medicines, for primary health care because of their low cost, better acceptability and lesser side effects. Naturally occurring medicinal plants, herbs having antihypertensive potential, so, several ethnobotanical studies performed in different parts of world showed that hundreds of plants are used worldwide for empirical hypertension treatment. This work, provides basic knowledge from medicinal plants used for high blood pressure treatment, to support future pharmacological and phytochemical investigation.

Keywords: hypertension, medicinal plants, side effects, herbs

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Abbreviations: BP, blood pressure; NO, nitric oxide; ACE, angiotensin- converting enzyme

Introduction

Hypertension is a worldwide epidemic, the most common serious chronic health problem and a high risk factor for myocardial infarction, arteriosclerosis, stroke, and end-stage renal disease. 25% of the world's adult population has hypertension and this is likely to increase to 30% by 2025.[1,2]

Blood pressure (BP) is controlled by several mechanism, (i.e nitric oxide, (NO), neural mechanisms, renal-endocrine mechanisms. Many antihypertensive agents, such as diuretics, β-blockers, calcium-channel blockers, and blockers of the rennin-angiotensin system, such as angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers among others are used separately or in combination to treat this disease,[3,4] but antihypertensive drugs have many side-effects as reduced renal function, dry cough, Angioedema among others[5] hence, the management of hypertension by herbal medicine is an alternative.[6]

Blood pressure management by medicinal plants

Side-effects from antihypertensive drugs have motivated researchers to find new medicines in metabolites or extracts from medicinal plants to control hypertension and that cause fewer side effects.[7-9] Recently, several ethnobotanical studies performed in different parts of world showed that hundreds of plants are used worldwide for empirical hypertension treatment .[9-11] On the other hand, the results of several ethnobotanical survey indicated that interviewed patients used medicinal plants to treat hypertension because phytotherapy is cheaper, more efficient and better than modern medicine.[4,12] Nature is the greatest source of remedy for many health problems. Today herbal medicines are used alone or beside chemical ones to treat various ailments.[13,14]

There are many medicinal plants recommended by the natives communities for the treatment of hypertension that provides new areas of research on the antihypertensive effect of medicinal plants.[8,11]

Ethnobotanical studies have described hundreds of plants used by communities for hypertension management; only in four papers (2015-2016) were found Ninety nine plants, so, Baharvand-Ahmadi[8] report twenty seven medicinal plants from twenty two families; Polat et al.[15] five from three families, Ahmad et al.[10] Forty-six plant species (Forty-three genera, twenty nine families) and Rawat et al.[16] in a review describe twenty one plants with clinical evidence and reported mode of action. Table 1 summarizes some of these findings. These plants are used as infusion, decoction beverages, and fresh fruits or raw, but many of them have no scientific evidence about their effectiveness or mechanism of action.

Table 1 Some medicinal plants used for the treatment of hypertension; scientific name, family name, plant parts used

Scientific Name	Family Name	Part Use
Passiflora edulis	Passifloraceae	Leaves, fruit
Achillea wilhelmsii	Asteraceae	Hydroalcoholic extract aerial parts
Allium cepa L	Amaryllidaceae	Bulb
Allium sativum	Liliaceae	Bulb
Allium sativum L.	Amaryllidaceae	Bulb
Anethum graveolens dhi	Apiaceae	Leaves
Apium graveolens	Apiaceae	Hydroalcoholic Leaf
Avena sativa	Poaceae	Whole Cereal
Berberis vulgaris	Berberidaceae	Fruit
Centaurea depressa M.	compositae	Seed
Cichorium intybus L	Asteraceae	Leaves
Crataegus sp	Rosaceae	Berry Extract
Hypericum perforatum	Hypericaceae	Leave
Laurocerasus officinalis R.	Rosaceae	Raw
Matricaria recutita	Asteraceae	Flower
Nigella sativa	Ranunculaceae	Seed Extract
Panax quinquefolius	Araliaceae	Ginseng
Rauwolfia serpentine	Apocynaceae	Reserpine Alkaloid
Rumex acetosella L	Polygonaceae	Aerial Parts
Viscum album	Santalaceae	Aqueous Leaf Extract
Ziziphus zizyphus	Rhamnaceae	Fruit

Many bioactive metabolites from plans exert beneficial effects on blood pressure, such as angiotensin- converting enzyme (ACE) inhibition and antihypertensive activity by passiflora edulis.[11,17] Blockage of receptor operated and voltage dependent calcium channels by Achillea wilhelmsii ;[18] activation of ß2-adrenoceptors,

by Crocus Sativus,[19] and alfa 1-adrenoceptor Antagonist by Viscum álbum.[20]

Conclusion

There are many plants that in folkloric or traditional medicine that are used for the management of hypertension, some have clinical evidence, some have scientific evidence of their mechanism of action and others do not, but it is undeniable that there is an inexhaustible source of these plants that Need to be studied in depth. This work, provides basic knowledge from medicinal plants used for high blood pressure treatment, to support future pharmacological and phytochemical investigation.

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Conflicts of interest

The authors declare no conflicts of interest related to this article.

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