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POTENTIAL DIURETICS OF INDIAN MEDICINAL PLANTS

Jadav Mayur[1], Sharma Ritesh[2], Joshi Devansh[3], Patel Manan[4], Yadav Himesh[5], Divya Mahyavanshi[6*]

Students[1,2,3,4,5], Assistant Professor[6]
Department of Pharmacology, Sharda School of Pharmacy, Pethapur – Gandhinagar.

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***Corresponding Author**
Divya Mahyavanshi
Assistant Professor,
Department of Pharmacology,
Sharda School of Pharmacy,
Pethapur – Gandhinagar.

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ABSTRACT

The traditional medicinal system in India has long recognized the therapeutic potential of medicinal plants, particularly their diuretic properties. Diuretics play a crucial role in promoting the excretion of sodium and water, thereby helping in the management of conditions such as hypertension, heart failure, liver cirrhosis, and renal disorders. Although synthetic diuretics are widely used, their prolonged use is often associated with adverse effects such as hypokalemia, hyperuricemia, dehydration, and metabolic disturbances. This has led to increased interest in herbal alternatives with fewer side effects. The present review highlights various Indian medicinal plants with potential diuretic activity, their phytochemical constituents, and their traditional uses. It emphasizes the importance of exploring plant-based diuretics as safer and effective therapeutic options. The study also underlines the need for further pharmacological and clinical investigations to validate the efficacy and safety of these herbal drugs.

KEYWORDS: Traditional medicine, Diuretics, Medicinal plants, Herbal drugs, Phytoconstituents, Electrolyte balance, Natural therapeutics.

INTRODUCTION

The traditional medicinal system in India, states that some plants have the diuretic property to increase the electrolytes excretion. As drugs for diuretic activity are available but it has serious side effects, likes if the medicine affects one mechanism, the other mechanism will either be up regulated or down regulated at the cellular level. As a result, the body's homeostasis is disrupted. As a result, modern drugs should be discontinued as soon as symptoms subside; nevertheless, in most chronic diseases, such as Arthritis, Chronic Nephritis, Chronic Hepatitis, and others, symptoms may persist if discontinued again. To overcome the side effects screening of herbal preparation as diuretic.[1]

WHAT IS DIURETICS[2]

Diuretics stimulate the excretion of Na+ and water. They decrease the reabsorption of Na+ and Cl^- from the filtrate while increasing water loss due to increased $NaCl^-$ excretion. This can be done directly on the nephron cells or indirectly by changing the filtrate content.

TYPES OF DIURETICS

Loop diuretics
Thiazide diuretics
Carbonic anhydrase inhibitors
Osmotic diuretic
Potassium sparing diuretic

USE OF DIURETICS[3]

Heart failure, liver cirrhosis, hypertension, and some kidney illnesses are all treated with diuretics in medicine. Loop diuretics are frequently recommended to patients with congestive heart failure. The reason for this is that loop diuretics are quite potent and provide the greatest amount of water loss. The reduction of fluid in the circulation lowers the pressure on the heart, allowing it to pump blood more efficiently. However, these medications have little effect on blood pressure. Thiazide diuretics are more effective hypertension treatments in this scenario. They cause a loss of sodium, chlorine, and water, all of which serve to reduce blood pressure. As a result, thiazide is the most commonly prescribed diuretic for hypertension. Potassium-sparing diuretics can aid people with congestive heart failure.

SIDE EFFECTS[4,5]

- Hypokalemia with thiazide and loop diuretics
- Hyper uricemia, dehydrationincreased low-density lipoproteins
- Metabolic acidosis
- Gastric problems including pepticulcer

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• Dose-related hearing loss (ototoxicity)
• Dehydration (hypovolemia), leading to hypotension

The traditional medicinal system in India, states that some plants have the property to have diuretic. Many drugs are available in the markets for diuretic activity, but they have serious side effects such as hypokalemia, hyperuricemia, hypotension etc. Therefore it is essential to screen out potential diuretic agents which have less or no side effects. So this is becoming major interest of researchers in all over the world to screen out such diuretics drugs which have less or no side effects with potential diuresis effect.

Table 1: List of herbal drug used in diuretic.[6-26]

Sr. No	Herbal Drug	Family	Part used	Chemical Constituents	Images
1	Dandelion	Asteraceae	Flower	Sesquiterpene lactones, triterpenoid, flavonoids, phenolic acids (such as caffeic and, sterols, carbohydrates	
2	Abutilon indicum	Malvaceae	Whole Plant	Mucilage, tannins, gallic acid, alkaloids, flavonoids, sterols, triterpenoids, saponins	
3	Acacia	Mimosaceae	Wood	Tannins, catechin phlobatannin	
4	Achyranthes Bidentata	Amaranthaceae	Seed, Roots	Oligosaccharide, Steroids, triterpenoids, alkaloids, coumarins	
5	Benincasa hispida	Cucurbitaceae	Roots, leaves, fruits	Pentacyclic triterpene	
6	Boerhaavia diffusa	Nyctaginaceae	Roots	Xanthone,β- ecdysone, flavonoid, arbinofuranoside	

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7	Capparis spinosa	Cappariadaceae	Bark, flower	Glucosinolates-glucoiberin, glucocapparin, sinigrin, glucocleomin, glucocapangatin	
8	Daucus carota	Umbelliferae	Roots, seeds	Apigenin, chypsin, luteolin, kaempferol, quercetin, furanocoumarins	
9	Derris trifoliate	Leguminosae	Fruit	Alkaloids, flavonoids, phenolic compounds, saponins, steroids, tannins, terpenoids, etc.	
10	Terminalia arjuna	Combretac-eae	Bark, leaves	Arjunolic acid, terminic acid, glycosides (arjunetin, arjunosides I– IV), and strong antioxidants, flavones,tannins, oligomeric proanthocyanidins	
11	Centratherum anthelminticum	Asteraceae	Seeds	Avenasterol	
12	Equisetum arvense	Equisetaceae	Leaves	Tannins, alkaloids, saponins, flavonoids, glycoside and caffeic acid , phenolicester.	
13	Zea mays	Gramineae	Leaves, fruit	Saponins, alantoin, β-sitosterol, glycoprotein	
14	Leandra dasytricha	Melastomat-aceae	Leaves	Di-O-hexoside, Shikimic, acid, Gallic acid	

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15	Abutilon indicum	Malvaceae	Whole plant	Mucilage, tannins, asparagines, gallic acid sesquiterpene alkaloids, flavonoids, sterols, triterpenoids, saponins, cardiac glycosides	
16	Azima tetracantha	Salvadorace-ae	Roots, leaves	Alkaloids-azimine, azcarpine, carpine	
17	Urtica dioica	Urticaceae	Whole Plant	Sterols, fatty acids, alkaloids, terpenoid	
18	Centella asiatica	Umbelliferae	Leaves	Triterpenoid saponins	
19	Cichorium intybus	Compositae	Entire herb	Citric and tartaric acids, acetic, lactic, pyruvic, pyromucic, palmitic and tartaric acids	
20	Cordia rothii	Boraginacea-e	Fruit	Alkaloids	

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