



## **REVIEW ON SOME YEMENI TRADITIONAL MEDICINAL PLANTS WITH THERAPEUTIC PROPERTIES**

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### **ABSTRACT**

This paper discusses preliminary review on the medicinal plants and traditional use of it by the Yemeni people in order to provide a comprehensive documentation for future investigations and suggest perspectives for conservation and management of medicinal plants of Yemen, due to over-exploitation of medicinal plants at an alarming rate. The survey of literature showed that a total of 51 species belong to 24 families and 42 genera, the most important families are Fabaceae (10 species, 7 genera), Solanaceae (7 species, 7 genera) and Euphorbiaceae (4 species, 3 genera). The investigation for medicinal plant diversity within these families revealed that many of these species are used by local and several tribal people including medicinal healers for curing more than 120 ailments. Each species has a scientific name, local name, family, ailments to be treated and the used part.

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### **INTRODUCTION**

The term of medicinal plants include a various types of plants are used in herbalism and some of these plants have a medicinal activities. Medicinal plants are the “backbone” of traditional medicine, which means more than 3.3 billion people in the less developed countries utilize medicinal plants on a regular basis [34].

The use of plants to cure diseases and relieve sufferings is a common practice that was started from the earliest times of mankind’s history [49]. Still, the use of plants as a source of medicine is very much important for human beings [54]. The traditional medicine is used in all parts of the world and has a rapidly growing economic importance, mainly by the use of medicinal plants that have a respectable position today, especially in the developing countries [4]. The World Health Organization estimated that 80 percent of the population of developing countries relies on traditional plant based medicines for their health requirements [78]. Also, the use of traditional medicine and medicinal plants in most developing countries, as a basis for the maintenance of good health, has been widely observed by [76]. Furthermore, an increasing reliance on the use of medicinal plants in the industrialized societies has been traced to the extraction and development of several drugs and chemotherapeutics from these plants as well as from traditionally used rural herbal remedies [77]. During the past decade, traditional systems of medicine have become a topic of global importance. Current estimates suggest that,

in many developing countries, a large proportion of the population relies heavily on traditional practitioners and medicinal plants to meet primary health care needs. Although modern medicine may be available in these countries, herbal medicines have often maintained popularity for historical and cultural reasons [47, 52, 79].

According to Al-Yahya (1984) [29], the Arabian Peninsula is the birth place of herbal drugs, and the use of folk medicine has existed there since time immemorial. Recent studies have reported that less than 750– 800 species of plants are still in use in Arabic Traditional Medicine for treatment of many diseases in the Arab World [55, 31, 69].

Various studies have been carried out in Yemen; it included plant taxonomy and medicinal plants and its use by various indigenous communities [6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 23, 26, 32, 41, 42, 43, 44, 45, 50, 51, 58, 59, 60, 63, 70, 71, 73, 74, 75].

Yemen has a rich diversity of plants that are being used by local communities for medicinal purposes. According to Al-Kulaidi (2005), 50% of Yemen’s population is dependent on traditional medicines for their primary health care. More than 500 plant species are used in Yemen in treatment of diseases [10]. Yemeni people are quite interested in wild plants, due to the high proportion of people living in rural areas, and also for economic reasons.

#### **Location of Yemen**

Yemen occupies an area about 527,970 km<sup>2</sup> in the south and southwestern part of the Arabian Peninsula. It lies between

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latitude "12° 40 - 17° 26" north and longitude "24° 30 - 46° 31" east. It is boarded by Saudi Arabia from the north, Sultanate Oman and Rub Al-Khali Desert from the east, Arabian Sea and Gulf of Aden from the south and the Red Sea from the west. Fig(1).About 3 %of the total land area can be used for agriculture. Range lands together with forest and woodlands comprise almost 40 % of the land area.



Fig 1 showing the geographical location of Yemen  
Source: <http://www.maphill.com/yemen/location-maps/flag-map/satellite-outside/>

## MATERIALS AND METHODS

The present study is the review of existing information on the medicinal plants of Yemen. We checked scientific studies published in journals, books, theses and reports were reviewed. We reviewed a lot of publications that provided information about the use of medicinal plant species to treat various ailments. Pertinent literature was searched in different electronic databases (ISI Web of Science, MEDLINE, Science Direct, Scopus, and Google Scholar). In this article, scientific and author names of plant species were checked for latest changes according to "The plant list" (<http://www.theplantlist.org>).

## RESULTS

The survey of literature showed that a total of 51 species belonging to 42 genera and 24 families were recorded. Distribution of medicinal plant species in the families shows variation; Fabaceae is represented by 10 species belong to 7 genera and Solanaceae is represented by 7 species belong to 7 genera then Euphorbiaceae is represented by 4 species belong to 3 genera and Rutaceae is represented by 4 species belong to 2 genera; and each Poaceae, Zygophyllaceae and Myrtaceae are represented by 2 species belong to 2 genera; and Pteridaceae, Vitaceae and Moraceae are represented by 2 species belong to 1 genus; and a single species and single genus in each was recorded by 14 families. The investigation for medicinal plant diversity within these families revealed that many of these species are used by local and several tribal people including medicinal healers for the cure of more than 120 ailments. An enumeration of these 51 medicinal species is given below with local names, parts used and medicinal uses. Families of plants were arranged according to the modified system APG IV (2016), while species were arranged alphabetically.

**Botanical Name:** *Adiantum capillus-veneris* L.  
**Family:** Pteridaceae

**Local Name:** Kabzarat Al-Bier. **Part Used:** Whole plant, leaves and rhizome.

**Medicinal Uses:** Jaundice, nasal catarrh, chest infection, urinary problems, blood loss, bone weakness, hair loss, dandruff, headache, fever and body muscular pains and chilblain. Above-ground parts are used for Asthma, chest cold, cough, edema, flu and urinary disorder [72]. Diuretic, expectorant, lactagogue, roots are for hair stimulant, bronchitis, renal gravels [37].

**Botanical Name:** *Adiantum incisum* Forssk.L  
**Family:** Pteridaceae

**Local Name:** Shear Al-Jen, Shar Al-Klab. **Part Used:** Whole plant.

**Medicinal Uses:** Decoction, juice, infusion of the whole plant and fronds are used orally for the treatment of fever, cough, diuretic, emmenagogue, expectorant, cold, pulmonary catarrh, also the fronds are used as a garnish on sweet dishes, tea, syrup, refreshing summer drink [67].

**Botanical Name:** *Aristolochia bracteolata* Lam.  
**Family:** Aristolochiaceae

**Local Name:** Liyah. **Part Used:** Whole plant, leaves and roots.

**Medicinal Uses:** Fresh roots are used for scorpion sting [36]. The plant is used to expel worms and as an effective and sedative facilitator. It is also useful in the treatment of snake bite. It is usually given with castor oil to treat colic pain and in cases of menopause [24].

**Botanical Name:** *Asparagus africanus* Lam.  
**Family:** Asparagaceae

**Local Name:** Mashob. Mashad. **Part Used:** Whole plant, leaves, roots and latex.

**Medicinal Uses:** The plant is used as an anodyne and aphrodisiac. Roots are useful in nervous disorders, dyspepsia, tumors, scalding of urine, throat infections, tuberculosis, cough bronchitis, general debility, sedative for nervous and pain. The herb is useful for treating anorexia, insomnia, hyperactive children and people who are under-weight, rejuvenating female tonic for overall health, vitality, sexual debility, infertility in both the sexes, and menopausal symptoms and increases milk secretion during lactation. The herb is useful in pregnancy for threatened abortion and ulcerative disorders of stomach [24].

**Botanical Name:** *Phoenix dactylifera* L.  
**Family:** Areaceae

**Local Name:** Nakhil. Tmr. **Part Used:** Fruits, seeds, leaves, pollen and roots.

**Medicinal Uses:** Asthma, bronchitis, tuberculosis, cough, soothe a sore throat, reduce fever, and variety of gastrointestinal disturbances [1]. Fresh fruit is nourishing, phlegm, fortified, chest diseases, fever, smallpox and gonorrhoea. The fresh juice is cooled, softened, tonic and used in the diseases of genetically urinary gonorrhoea. Seeds paste powder is used to treat hemorrhoids [24]. Palm is an ideal food for humans to contain the main nutrients such as sugars that compensate the body for hypoglycemia during fasting. Dates are easy to digest and have a strong effect on the body, urine, clean the liver, wash the kidneys and prevent it from coughing,

bronchitis, sputum and its fibers. Combining constipation and its alkaline mineral salts modify the acidity of the blood which causes kidney stones, gallbladder, gout, hemorrhoids, high blood pressure, It does not prevent dates only for obese, diabetics, and increases the dates in the weight of children and preserves the moisture of the eye and luster and prevents the sharpness of the ball and wicker and strengthen vision and nerves of hearing and calm the nerves and strengthens and fights nervous anxiety, activates the thyroid gland, serenity, tranquility in the self by eating in the morning with a cup of milk and soften blood vessels, moisten the intestines, keep them from weakness, inflammation, strengthens the brain cells and strengthens the muscles, fights dizziness, vision, laziness when fasting and tired [2]. Roots are used to treat toothache. The gum is taken out from the trunk has been successfully used to treat diarrhoea and urinary complaints. Palm is an excellent source of vitamin C and dietary fibers, also supply vitamin A and B, different minerals and various amino acids. The antioxidants found in dates can also assist in decreasing the danger of cancer and cardiovascular conditions, while ensuring a healthy immune system [5]. Seed powder is used in some traditional medicines; its decoction is applied for treating kidney stones, diarrhoea and genitourinary ailments [80].

**Botanical Name:** *Musa paradisiacal* L.

**Family:** Musaceae

**Local Name:** Mouz. **Part Used:** Roots, leaves and fruits.

The whole parts of the Banana have medicinal applications; the flowers in bronchitis dysentery and on ulcers; cooked flowers are given to diabetics; the astringent plant sap in cases of hysteria, epilepsy, leprosy, fevers, hemorrhages, acute dysentery and diarrhoea, and it is applied on hemorrhoids, insect and other stings and bites; young leaves are placed as poultices on burns and other skin afflictions; the astringent ashes of the unripe peel and of the leaves are taken in dysentery and diarrhoea and used for treating malignant ulcers; the roots are administered in digestive disorders, dysentery and other ailments [61]. Bananas are used to treat hemorrhoids [24]. Fruits are eaten daily for ulcer and stomach acidity [33].

**Botanical Name:** *Cyperus rotundus* L.

**Family:** Cyperaceae

**Local Name:** Al-Soad. **Part Used:** Whole plant and tubers.

**Medicinal Uses:** Tubers are used in the form of drenched to treat fever, diarrhea, dysentery, dyspepsia and vomiting. Tubers are cut and mixed with green ginger, honey, are given in cases of dysentery, gastrointestinal disorders, a diuretic and used in uterine complaints, and the expulsion of worms. Paste made of fresh tubers is put on the breasts to produce milk; also Paste is put on scorpion sting [24]. Tubers are used as a sedative for headaches, anxiety, stress, urinary tract infections and menstrual disorders [2].

**Botanical Name:** *Cynodon dactylon* (L.) Pers.

**Family:** Poaceae

**Local Name:** Wabl. Nageel. **Part Used:** Leaves, tubers and whole Plant.

**Medicinal Uses:** Diuretic, astringent, styptic, veterinary aid, ophthalmic, menorrhagia, rhinorrhea, anasarca, dysentery, urinary tract inflammation, dysuria, gonorrhoea [67]. Stop wound bleeding [35]. Boiled root is used with water to flow urine, to treat urinary disorders and bladder inflammation, and

to use plant to purify blood, skin diseases and wounds [21]. Plant juice is used in eye inflammation as well as to stop the bleeding wounds, and its powder is used for inhalation to stop the hemorrhage. Fresh plant juice is used in cases of ascites, dysentery and gonorrhoea [24]. Juice of whole plant with honey is taken orally once a day for one week to cure asthma [25].

**Botanical Name:** *Dactyloctenium aegyptium* (L.) Willd.

**Family:** Poaceae

**Local Name:** Karzy. Regl Al-Hrba. **Part Used:** Whole plant and seeds.

**Medicinal Uses:** The plant is used as a stimulant and to treat cough in children and the seeds are used for neurological diseases and to remedy pulmonary hemorrhage, dysentery and treatment of kidney pain [24]. Wound sepsis [35]. Antalgic and wounds [67].

**Botanical Name:** *Argemone mexicana* L.

**Family:** Papaveraceae

**Local Name:** Barood. Snafh. **Part Used:** Leaves, roots, flowers, stem, latex and seeds.

**Medicinal Uses:** Seeds oil is a powerful laxative used against skin ulcers, rashes, dysentery and other abdominal diseases. It is recommended to use lactobacillus for ascites, jaundice and skin diseases [24]. The whole plant is analgesic, antispasmodic, possibly hallucinogenic and sedative. It contains alkaloids similar to those in the opium poppy (*Papaversomniferum*) and is used in the treatment of warts, cold sores, cutaneous affections, skin diseases, itches. It has also been used to treat cataracts and has been taken internally in the treatment of dropsy and jaundice. Root is alterative and has been used in the treatment of chronic skin diseases. Flowers are expectorant and have been used in the treatment of cough and other chest complaints. Seed is demulcent, emetic, expectorant and laxative. An infusion, in small quantities, is used as a sedative for children, but caution is advised since the oil in the seed is strongly purgative. Seed has also been used as an antidote to snake poisoning. The pounded seeds, mixed with mustard oil, are applied externally to treat itchy skin. The oil from the seed is demulcent and purgative. It has been used externally in the treatment of skin problems. Caution is advised in the use of this oil, prolonged ingestion produces toxic effects resembling those occurring in epidemic dropsy [2].

**Botanical Name:** *Cissus quadrangularis* L.

**Family:** Vitaceae

**Local Name:** Sila, Khudam. **Part Used:** Roots, stems and leaves.

**Medicinal Uses:** The liquid is used in the form of drops in the ear inflammation that produces the pus, and in the nose. It is used in menstrual cycle regulation. Roots powder is used in bone fractures. Crushed leaves and the newly grown buds are used in some abdominal pains and indigestion [24]. Root Powder is applied topically to anus for curing Hemorrhoids [36].

**Botanical Name:** *Cissus rotundifolia* (Forssk.) Vohl.

**Family:** Vitaceae

**Local Name:** Halas. **Part Used:** Leaves.

**Medicinal Uses:** The plant is used in Yemeni folk medicine to treat ear pain and rotting, as the leaves are eaten to increase appetite; it is also used to reduce thirst [21]. Liver disease, malaria and otitis [62].

**Botanical Name:** *Fagonia indica* Burm.

**Family:** Zygophyllaceae

**Local Name:** Shukaa. **Part Used:** Whole plant and leaves.

**Medicinal Uses:** Abdominal colic, dyspepsia, fever, venereal diseases, leaves and roots boiled in water and is taken orally for colic, paste made leaves is applied on forehead for fever, whole plant is boiled in water and extracted water is used for washing genitals [68]. Gout [35]. Diabetes, diuretic and headache [62].

**Botanical Name:** *Tribulus terrestris* L.

**Family:** Zygophyllaceae

**Local Name:** Adhrass Al-Kilab. Hassak.

**Part Used:** Whole plant, fruits, roots, stem, leaves and seeds.

**Medicinal Uses:** One cup of fruit decoction with sugar is given twice a day for three to four days against urinary trouble. Kidney stones; seeds pounded with seeds of *Celosia argentea* in equal quantity in water, extract is given to dissolve kidney stone, one tea cup thrice a day till one month. Blood purification; the extract of young leaves is used for blood purification- one teaspoonful twice a day for 11 days [27]. The plant and the dry fruits are refresh, laxative and diuretic [21]. Whole plant breaks the kidney stones and bladder, to treat urine and bites snakes and kills fleas. Sexual tonic for men. Green leaves are eaten to treat spleen enlargement and sores. The plant also is used for the treatment of heart disease, arthritis and anaphylactic [24]. Renal colic [35]. Fruits; natural nutritional supplement, help impotence [72]. The plant is used directly as a herb or as a main component for production of a number of medicines and food supplements such as for physical rejuvenation, therapy for the conditions affecting liver, kidney, cardiovascular system and immune systems, also it is used as a folk medicine for increased muscle strength, sexual potency and in treatments of urinary infections, heart diseases and cough. It is considered invigorating stimulant, aphrodisiac, and nutritive [48]. Tonic, diuretic and aphrodisiac [2].

**Botanical Name:** *Acacia ehrenbergiana* Hayne.

**Family:** Fabaceae

**Local Name:** Salam. **Part Used:** Wood.

**Medicinal Uses:** Wood is burnt and the fumigation is put under the affected limb for paralysis and anthelmintic [46].

**Botanical Name:** *Acacia etbaica* Schweinf.

**Family:** Fabaceae

**Local Name:** Qarad. **Part Used:** Leaves and bark.

**Medicinal Uses:** Plant is used to treat swelling, ring worm infection, hemorrhoids, scabies and anthrax. The bark of the plant is also chewed as a stimulant and for the treatment of gonorrhoea [3]. Tanning hides, stimulant, gonorrhoea [72].

**Botanical Name:** *Acacia tortilis* Hayne.

**Family:** Fabaceae

**Local Name:** Sayaal. Talh. Samor. **Part Used:** Seeds, bark, gum and stem.

**Medicinal Uses:** Powdered bark is used as a disinfectant in healing wounds; it used as against anthelmintic. The stem is used to treat asthma. Seeds are taken to treat diarrhoea, stomach acidity and jaundice [72].

**Botanical Name:** *Alhagi maurorum* Medik.

**Family:** Fabaceae

**Local Name:** Aqool. **Part Used:** Whole plant, flowers, seeds and roots.

**Medicinal Uses:** Roots decoction is prepared and taken orally for kidney stones. Poultice made of roots and flour is applied for rheumatism and joint pain for 3 hours a day [33]. Fresh juice of plant is used as a sedative for cough, antiseptic and the digestive system, helps to get out the gravel from the kidneys and bladder. Plant powder is used to prepare a paste to treat hemorrhoids and wounds. The extracted oil of plant is used for treatment of rheumatism and arthritis [2]. It is customarily used in folk medicine as a remedy for rheumatic pains, bilharziasis, liver disorders, various types of gastrointestinal discomfort, general tonic, anthelmintic, to treat constipation, jaundice, and arthritis. It also used as diuretic, blood purifier, antimicrobial, for treatment of dysentery, upper respiratory system problems, wounds, hemorrhoids and uterine problems. Roots are used as aphrodisiac. The plant is used as laxative, diuretic and expectorant. The oil extracted from leaves is used for curing rheumatism. A decoction made from seeds of *Alhagi* used for curing kidney stones [28].

**Botanical Name:** *Ceratonium siliqua* L.

**Family:** Fabaceae

**Local Name:** Kiranit. Khurub. Kharroub. **Part Used:** Fruits

**Medicinal Uses:** Fruits syrup is taken three times a day as needed to treat mouth and gum inflammation. One cup of fruits syrup is taken internally, 2-3 times a day as needed in the treatment of jaundice, iron deficiency anemia, cough, digestive system and diarrhoea [33]. The boiled fruits are used for the treatment of cough and colitis. Gum, regulates blood sugar and prevents blood clotting [2]. Acidity, indigestion, constipation, diuretic, laxative, sperm stimulant and sterility [37].

**Botanical Name:** *Delonix regia* (Hook.) Raf.

**Family:** Fabaceae

**Local Name:** Ranf. **Part Used:** Roots, leaves and seeds.

**Medicinal Uses:** The plant is used to treat rheumatism and bloating. Seeds are used as a good laxative [21]. The plant is used to remove the pain of tumors and hemorrhoids. Roots are used for reducing inflammation. Seeds are anti-fever, anthelmintic, sores, itching and jaundice [24]. Leaf extract is given for curing constipation complaints, two teaspoonfuls twice a day for three days. Leaves are crushed and applied externally for curing rheumatic troubles [25].

**Botanical Name:** *Parkinsonia aculeata* L.

**Family:** Fabaceae

**Local Name:** Saysiban. **Part Used:** Flowers, leaves, fruits and stem.

**Medicinal Uses:** Decoctions of leaf, fruit and stem are taken orally to treat fever, malaria and as an abortion. Extraction of flowers and leaves and mixed with alcohol are applied as a poultice to treat rheumatism [64].

**Botanical Name:** *Senna alexandrina* Miller.

**Family: Fabaceae**

**Local Name:** Ashrq. Sana. Sanamakki. Salamekki.

**Part Used:** Fruits, leaves and seeds.

**Medicinal Uses:** Laxative and diarrhoea [24]. Cup of boiled leaves is drunk from times to other for constipation and weight loss [33]. Root is jaundice. Fruits and leaves are stomach pain [36]. The plant is used to treat kidneys, jaundice, swollen spleen, anemia and typhoid [2]. Headache, edema, nausea, constipation, flatulence, abdominal pain, obesity [1].

**Botanical Name:** *Senna occidentalis* (L.) Link.

**Family: Fabaceae**

**Local Name:** Juljul. **Part Used:** Leaves, flowers, seeds and roots.

**Medicinal Uses:** Leaf paste is applied externally to treat in eczema disease. Decoction of leaf is used to cure throat infection and mumps disease. 10 gm of seed powder is mixed with one spoon of honey and given orally for the treatment whooping cough. Seeds paste is applied externally to cure scabies, twice a day till cure [57]. The leaves, seeds and roots are used as good laxative. Seeds are used for treatment fever, cough and pertussis. Leaves, roots and flowers are used for indigestion [24].

**Botanical Name:** *Tephrosia Apollinea* (Del.) DC.

**Family: Fabaceae**

**Local Name:** Shoph. **Part Used:** Leaves.

**Medicinal Uses:** Bronchitis; cough; earache; wounds and bone fracture, ground leaves applied to the nose and inhaled to relieve nasal congestion; leaves boiled with water which is then used as eardrops; powdered leaves applied on wounds or heated with water to make a paste which is then applied to bone fractures [46].

**Botanical Name:** *Malus sylvestris* Miller.

**Family: Rosaceae**

**Local Name:** Tofah. **Part Used:** Fruits.

**Medicinal Uses:** The health benefits of apple include improved digestion, prevention of stomach disorders, gallstones, constipation, liver disorders, anemia, diabetes, heart disease, rheumatism, eye disorders, a variety of cancers and gout. It also helps in improving weakness and provides relief from dysentery, also apple is used for treating dysentery, dental and skin care [25].

**Botanical Name:** *Ziziphus spina-christi* (L.) Desi.

**Family: Rhamnaceae**

**Local Name:** Sidr. Dom. **Part Used:** Roots, stem, leaves, seeds and fruits.

**Medicinal Uses:** Leaves are boiled in water then the extracted water is taken and wash skin and hair to soothe skin and reduce dandruff. Seeds and fruits are eaten daily for chest pains; crushed fresh leaves are applied locally to relieve joints pain [68]. Fruits are used as purifying agent for blood and diarrhoea. Leaves and crust are used for curing wounds and skin problems [24]. Stem bark is antispasmodic. Root is antispasmodic and relieves fever [36]. Duodenum and stomachache [35]. Cold, hypertension, astringent anthelmintic, anti-diarrhoea and demulcent [72].

**Botanical Name:** *Ficus carica* L.

**Family: Moraceae**

**Local Name:** Balas. Teen. **Part Used:** Leaves, fruits, bark and latex.

**Medicinal Uses:** Drops of latex are put on the thorn which is then pulled out. Fruits contain sugar, acetic, malic, ascorbic and citric acids and enzymes, also fruits are used laxative and diuretic [46]. Sap secreted of stem is applied on affected areas and repeated daily for curing warts. Fruits are eaten to treat constipation. Leaves are boiled and drink a cup twice daily for kidney stones, respiratory system, asthma and cholesterol [33]. Laxative, analgesic and nourishing agent. Fig fruits are used to remove gravel from the kidney and bladder. It is given for the treatment of hemorrhoids, gout and ulcers [24]. Fruits are used to treat constipation, chest inflammation, urinary tract infections, whooping cough, throat ulcers and gum swelling. Leaves are used to treat diabetes, gingivitis, warts and boils [2]. Liver disease, stomach ailments, digestive problems, obesity, and inflammatory diseases [42]

**Botanical Name:** *Ficus cordata* Thunb.

**Family: Moraceae**

**Local Name:** Teen. **Part Used:** Leaves and fruits.

**Medicinal Uses:** Leaves are used to remedy diarrhoea, dysentery and internal and external bleeding. Fruits are used in the treatment of constipation; reduce blood pressure, hemorrhoids, joints pain and some skin diseases such as warts and vitiligo [2].

**Botanical Name:** *Urtica urens* L.

**Family: Urticaceae**

**Local Name:** Gress. **Part Used:** Leaves, fruits and roots.

**Medical Uses:** Plant is used in the treatment of rheumatism, arthritis and the plant is used to get rid of kidney stones, wounds, burns and hemorrhoids [2].

**Botanical Name:** *Citrullus colocynthis* (L.) Schrad.

**Family: Cucurbitaceae**

**Local Name:** Handal. **Part Used:** Leaves, seeds, roots, dried fruit and pulp of the peeled fruit.

**Medicinal Uses:** Crushed leaves is mixed with garlic to make poultice is applied on the bitten area. Leaves powder is mixed with water and taken as a laxative. Crushed seeds are mixed with water are used as shampoo to darken hair color. Crushed fruits are mixed with oil and rubbed to relieve joints pain. The active compound is *colocynthis*, which is a strong purgative. It can produce severe abdominal pain, vomiting, diarrhoea, delirium and blood stained watery stools; it should not be given to nursing mothers as it can appear in the milk during lactation [53, 46]. The pulp of the fruit is useful as laxative, worm repellent, anti-fever, gas repellent, asthma, cold, indigestion, constipation, anemia and sore throat. Roots are used to treat breast, joint inflammation and snake, scorpions bites [21]. The fruit of the melon is taken and cut into four pieces and each piece is used for hemorrhoids once [24]. Fruit is cut in the middle and put around the leg heel for all night for rheumatism and joints pain. One drop of fruits juice is dropped into nose for jaundice. Smearing the infected area with internal pulp for hemorrhoids [33]. Analgesic and skin infections [35]. Leaves inhibits the proliferation of breast cancer cells, the research showed the effect of water extract of melon seeds to reduce the proportion of diabetes. The plant treats chronic

constipation, jaundice, stomach trouble, urine and asthma. Seeds oil is used to treat hemorrhoids, skin ulcers, scabies and reduce rheumatism and joints pain [2]. Decoction, poultice, eaten fresh. Hydragogue, cathartic, diuretic, emetic, expectorant, purgative, flu, jaundice, ascites, analgesic, anti HIV, anti-aging, allergy, anti-asthmatic, cancer, antibacterial, diabetes, antifertility, sedative, malaria, antimutagenic, antioxidant, antiscorbutic, antiseptic, antitumor, bronchial relaxant, carminative, fungicide, herbicide, insecticide, laxative, lubricant, mutagenic and purgative [67]. Diuretic, rheumatism, purgative, carminative and antiepileptic [72].

**Botanical Name:** *Catha edulis* (Vahl) Forssk.

**Family:** Celastraceae

**Local Name:** Qat. **Part Used:** Leaves, tender branches.

**Medicinal Uses:** Leaves are chewed to increase mental activity, reduce weight and cure obesity [2].

**Botanical Name:** *Euphorbia cactus* Ehrenb. **Family:** Euphorbiaceae

**Local Name:** Kirath. Killah. Qasas. **Part Used:** Latex.

**Medicinal Uses:** Latex is commonly used in the treatment of skin diseases such as ulcers and tumors, and is used in the treatment of skin diseases in animals. Latex is dangerous and must be treated with caution if it falls on the eye, causing inflammation and severe pain, as well as for open wounds [21].

**Botanical Name:** *Euphorbia granulate* Forssk.

**Family:** Euphorbiaceae

**Local Name:** Libanah. **Part Used:** Latex.

**Medicinal Uses:** Latex is used internally to expel intestinal worms, also the latex is taken as a purgative, anthelmintic and diuretic [2]. Internally for intestinal worms [72].

**Botanical Name:** *Euphorbia helioscopia* L.

**Family:** Euphorbiaceae

**Local Name:** Heloan. **Part Used:** Roots, seeds, latex and whole plant.

**Medicinal Uses:** It is used for various biological activities such as anti-tumor, anticancer, anti-inflammatory, antiviral and antibacterial. These species have group of Flavonoids are beneficial for human health due to a large range of biological activity such as anti-mutagenic, anti-carcinogenic, immunostimulating and anti-inflammatory and arteriosclerosis inhibiting effects [66]. Decoction, liniment and juice is purgative, ulcer, anti-rheumatoid, vermifuge, mentalia, cholera, cancer, anthelmintic, eruptions, neuralgia, anti-periodic and febrifuge [67].

**Botanical Name:** *Ricinus communis* L.

**Family:** Euphorbiaceae

**Local Name:** Kharoua. Ziton. **Part Used:** Roots, fruits, leaves, seeds and oil.

**Medicinal Uses:** Leaves are burnt and the smoke is taken to cure bad breath, crushed leaves is applied to blisters and ulcers and leaves extract is used as eye drops to relieve pain, root is added to corn stalk and chewed to relieve toothache. Ricinine is a cardiac stimulant [30]. Poultice made

of seeds oil are applied on affected area two times a day for hemorrhoids and boils. Cup of oil is drunk in empty stomach once daily for helminthes and laxative. Oil is applied externally to affected areas and massaged for hair loss and skin diseases. 3 of seeds are drunk after birth directly, contraceptive to three years [33]. The extracted oil of the seeds is used as a laxative, effective and the expulsion of worms. It is used to treat skin diseases. Roasted roots are used in colic accompanied by bloating, kidney pain and asthma [24]. Leaves are heated and used for reducing swellings and insect bites. Seeds oil is laxative extensively given to the babies in cases of constipation and rheumatic complaints. Two tablespoon of root extract along with honey or sugar is given twice a day for three to four days to treat asthma, bronchitis and dysentery [2]. Constipation, skin diseases, eczema and psoriasis [1]. Chest allergy, constipation, colic, common cold, abscess, headache, rheumatic and arthritis [37].

**Botanical Name:** *Erodium cicutarium* (L.) L'Her.

**Family:** Geraniaceae

**Local Name:** Zabeb Al-Raie. **Part Used:** Whole plant, roots, leaves and seeds.

**Medicinal Uses:** The extract of plant possesses holding properties to prevent uterine bleeding, diarrhoea and intestinal worms. The plant contains compounds that facilitate birth in women. Roots and leaves are used to increase milk flow in lactating mothers [21]. Herb is used to treat uterus problems as a stop bleeding and a lot of menstruation and inflammation of the uterus. The large doses decrease the blood pressure and the smaller dose increases. Seeds are a treatment for gout tumors [24].

**Botanical Name:** *Eucalyptus camaldulensis* Dehnh.

**Family:** Myrtaceae

**Local Name:** Kafor **Part Used:** Leaves

**Medicinal Uses:** Decoction of leaves is prepared and drunk for reduction of fever [33]. The extracted oil of leaves is used to improve the function of the lungs, anti-cough, convulsions, diabetes and rheumatism. The boiled leaves are used in the treatment of influenza, indigestion, kidney and bladder diseases, oral inflammation, bleeding of the gums and malaria fever [2].

**Botanical Name:** *Psidium guajava* L.

**Family:** Myrtaceae

**Local Name:** Guava. **Part Used:** Fruits, leaves, bark and roots.

**Medicinal Uses:** Decoction of leaves is prepared and taken twice a day to reduce cough [33]. Paste made of crushed bark is applied externally to cure herpes. Fruit extract is applied locally to relieve bleeding gums. Decoction of root bark is given to treat diarrhoea complaints, two tablespoonful twice a day [25].

**Botanical Name:** *Mangifera indica* L.

**Family:** Anacardiaceae

**Local Name:** Manjo, Amb. **Part Used:** Leaves, fruits, flowers, seed pulp and stem bark.

**Medicinal Uses:** Boiled leaves and stem for diabetes, antibacterial and anti-inflammatory [25]. Sedative and as a respiratory stimulant [46]. Leaves are used to treat



anthelmintic. Gum is used in itches. Decoction of young leaves are used in burning sensation during micturition, fever and toothache. Seeds for anemia, hypotension, diuretic, rheumatism, diabetes, asthma, syphilis, gastric and hepatic disorders, astringent, tonic, emetic, toothache, dysentery, diarrhea and cough [27].

**Botanical Name:** *Citrus aurantifolia* (Christm.) Swingle.  
**Family:** Rutaceae

**Local Name:** Lim Hamith. **Part Used:** Leaves, flowers and fruits.

**Medicinal Uses:** The plant is used medicinally as a disinfectant, antiseptic, antipyretic, antihypertensive, blood pressure, anthelmintic, and anti-rheumatic. It increases the secretions of the stomach and liver, cold, digestion, absorption, fever, nausea, vomiting, intestinal obstruction, anti-poisoning and diarrhea, lemon juice is also used to reduce stomach infections, blood infections and headache [21].

**Botanical Name:** *Citrus limon* (L.) Osbeck.  
**Family:** Rutaceae

**Local Name:** Lemon. **Part Used:** Fruits, leaves and oil.

**Medicinal Uses:** Ripe fruit is eaten or juice is drunk for cold and fever, dried fruit cortex is mixed with myrrh, salt and fenugreek in water, taken as a drink in the morning for chest pains, dried fruit is crushed with salt and hot water to make a paste, which is applied to remove thorns, bark is boiled in water, taken as drink to relieve stomachache [20]. Half lemon is squeezed with spoon of coffee, mixed and eat once only for diarrhoea. Squeeze a lemon in a cup of water with little sugar, three times a day, and smear juice of lemon on the forehead to treat influenza, headache and fever. Small piece is put on tooth with little salt, to reduce toothache and bleeding [33]. Fruit is eaten or juice of lemon is taken orally for diarrhoea, flu, cold, headache, fever, and to remove poison [25].

**Botanical Name:** *Citrus sinensis* (L.) Osbeck.  
**Family:** Rutaceae **Local Name:** Portogal.

**Part Used:** Fruits, roots and stem.

**Medicinal Uses:** Orange juice is drunk daily, or eats two fresh oranges daily for flu, malaria, cold, indigestion, nervous calming, colic, stomach pain, nausea and vomiting, as a treatment for fever and as a stimulant of the digestive system. It also prevents bleeding of the gums and indigestion. Orange peel is crushed with water and drunk to treat headaches. The leaves are used to treat certain neurological diseases and in some cases of epilepsy [21]. Leaf decoction with salt is taken orally for digestive tract ailments, nerve disorders, fever, asthma, blood pressure, general fatigue and vomiting. Fruit juice or leaf decoction with sugar is taken orally for cold and loss of appetite and liver ailments, while crushed leaf decoction as a bath relieves headache and rheumatism. Broken bones are massaged with roasted fruit [25]. Orange juice is drunk daily, or eats two fresh oranges daily for influenza, indigestion, nervous calming [33].

**Botanical Name:** *Ruta chalepensis* L.  
**Family:** Rutaceae

**Local Name:** Chedab. Shathab. **Part Used:** Leaves, flowering stems and roots.

**Medicinal Uses:** Shoot is indigestion, general weakness and arthritis [1]. In Saudi Arabia, a decoction of the aerial parts of

the plant is used as an analgesic and antipyretic and for the treatment of rheumatism and mental disorders [3, 38, 65]. Fresh brunch and buds are used against headaches, help menstruation and anti-colic. The plant is useful for the treatment of vitiligo, muscle stiffness and arthritic pain. Oil is anthelmintic, anti-colic and diuretic [24]. The leaves are used in folk medicine as sexual tonic in men, stimulation of pregnancy, skin infections, eczema, rheumatism and joint pain [2].

**Botanical Name:** *Capsicum annuum* L.  
**Family:** Solanaceae

**Local Name:** Pesbas. Flflhar. **Part Used:** Fruits and leaves.

**Medicinal Uses:** The fruits are activated to the blood circulation, stimulant of the nervous system, as well as in throat and tonsillitis and laryngitis [24]. Fresh fruits are eaten with meals for iron deficiency anemia [33].

**Botanical Name:** *Datura innoxia* Mill.  
**Family:** Solanaceae

**Local Name:** Banj. **Part Used:** Leaves, fruits, seeds and the extracted oil.

**Medicinal Uses:** Seeds are used to relieve toothache (directed into the mouth) [36]. Colic gripes, carminative, anti-asthmatic, tussive, anti-tumor, hysteria, anti-rheumatoid, emmenagogue, flu, transudation, headache and anesthetic [67]. Asthma, respiration straits and hemostatic [37].

**Botanical Name:** *Lycium shawii* Roem. &Schult.  
**Family:** Solanaceae

**Local Name:** Aosg. Zarb. **Part Used:** Roots and leaves.

**Medicinal Uses:** Mouth ulcers [35]. The plant is used in Chinese medicine to treat diabetes and hearing impairment, and is used in Indian medicine in the treatment of anemia, fistula, scabies and tooth pain [2]. Dry powder of the plant is used locally by traditional healers as anti-diabetic and hypotensive agent [22]. Treat mouth sores, relieve backache, washing polio patients [72].

**Botanical Name:** *Nicotiana glauca* R. Graham, Edinb.  
**Family:** Solanaceae

**Local Name:** Cegarh. Hashesh. **Part Used:** Leaves.

**Medicinal Uses:** Hemostatic and abscess [37].

**Botanical Name:** *Solanum americanum* Mill.  
**Family:** Solanaceae

**Local Name:** Hadg. **Part Used:** Leaves, stem, fruits and roots.

**Medicinal Uses:** The plant is a sedative, diuretic, repellent effect and as a treatment for skin diseases. Leaves are put on the swollen testicles. Fresh fruits are antibiotic and are used against bacterial microbes, to treat hepatitis, gastritis, inflammation of the intestine, inflammation of the spleen, uterus and tonsillitis [24]. Liver disorders, jaundice, cirrhosis, inflammatory disorders, rheumatism and swollen joints [1]. Liver diseases, diuretic, constipation, dermatitis, arthritis, rheumatic and hypertension [37].

**Botanical Name:** *Lycopersicon esculentum* Mill.  
**Family:** Solanaceae

**Local Name:** Tomatoes. **Part Used:** Fruits

**Medicinal Uses:** Tomatoes can make people healthier and decrease the risk of conditions such as cancer, osteoporosis and cardiovascular disease. People who ate tomatoes regularly a reduced risk of contracting cancer diseases such as lung, prostate, stomach, cervical, breast, oral and colorectal [24]. One fruit is cut and rub of affected area for snake, scorpion, bees stings and burns. Uncooked fruits are eaten daily to increase iron percentage and with salt in low pressure to circulation and blood pressure [33].

**Botanical Name:** *Withania somnifera* (L.) Dunal.

**Family:** Solanaceae

**Local Name:** Ebab. **Part Used:** Roots, leaves and fruits.

**Medicinal Uses:** Fresh leaves are pounded and applied as poultice on burns and sunburn, also fresh leaves are pounded and mixed with garlic and applied on the swelling stings. Roots powder is taken daily in small amounts for fertility in sterile women [68]. Leaves are put externally on tumors and on the thyroid glands. The plant is used to treat infections, arthritis, bronchitis, asthma, ulcers, scabies, insomnia and gonorrhoea. Crushed root and broken leaves are put on sores and painful tumors. Fruit is diuretic [24]. Vermicide and diuretic [37].

**Botanical Name:** *Olea europaea* L.

**Family:** Oleaceae

**Local Name:** Zyton, Itm. **Part Used:** Leaves, fruits and oil.

**Medicinal Uses:** Resin is mixed with the gall bladder of a black sheep or goat, and swallowed for cataract. Powdered fruit is mixed with salt and dates and made into a paste, applied to the broken part. Leaves and bark are pounded with water and applied to skin rash. Ash of burnt leaves is put on blisters and ulcers. Bark is put in hot water; solution is cooled and taken as a drink to cure constipation [46]. Oil is rubbed on the chest for coughing. Leaf decoction is taken orally for diabetes and high blood pressure. Cup of oil is drunk in morning for stones in kidney. Oil is mixed with garlic, applied externally to treat ear inflammation. Oil is applied externally for hair loss and muscle contractions. Poultice of oil put on wound to stop bleeding. Cup of oil is drunk for poisoning [33]. Coughing, diabetes, high blood pressure, kidney stones, ear inflammation, hair loss, muscle contractions and stop bleeding poisoning. Oil is rubbed on the chest for cough [2]. Oil to treat otitis, inflammation and chronic constipation [56]. Gingivitis, dyspepsia, eczema, constipation and earache [37].

## CONCLUSION

As the major part of the population of Yemen is much poor, so traditional herbal treatment has still been surviving as a dependable health care system among these people. Many of these methods of treatment have been practiced rural herbal practitioners of both sexes. They have acquired knowledge on treatment orally from their forefathers through generations. All the traditional healers use fresh plants as well as preserved herbal parts for preparation of recipe. Herbal medicines are normally prescribed for external use in the form of pastes or aqueous preparation and applied locally or massaging to cure some very particular ailments like paralysis, headache, body ache, rheumatic pain, dislocation of bone joints, different kinds of skin diseases, sores, cuts and wounds etc. Also, traditional herbal medicines are prescribed orally for the treatments of different kinds of stomach complain, urinary trouble,

bronchitis, asthma, jaundice etc, administered medicines are prescribed orally in the form of aqueous mixture, mixture with food, cooked form, infusion, globules, decoction. In addition to that dried plant parts are prescribed to smoke for the treatment of some particular internal troubles like asthma, cough, throat trouble, also some of the medicinal plant parts are boiled and the patient is advised to inhale the steam of the mixture for few minutes to get remedy from some particular ailments like sinus, headache and some other respiratory troubles.

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