Review

A review on ethno-medicinal plants used in traditional medicine in the Kingdom of Saudi Arabia

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Abstract

The traditional medicine based on medicinal plants in the Kingdom of Arabia Saudia presents a strong relationship belonging to natural remedies, health, diet, and folk healing practice recognized by a specific culture. The aim of the current study is to carry out an ethnobotanical review on medicinal plants used in traditional medicine in the Kingdom of Arabia Saudia including information on plant species, used parts, preparation method as well as medical uses. Earlier published data in journals, textbooks, periodicals, websites, and databases written in pharmacological evidence of Saudi medicinal plants were based on gathering information. The present review work reported that 96 species belonging to 47 families have been used in Saudi Pharmacopeia. Amaranthaceae has the highest number of plant species (7) followed by Asteraceae, Apocynaceae, and Fabaceae with 5 plant species in each. The inventoried plant species in the current work are frequently used for the treatment of various illnesses and to ensure the medication safety of Saudi people. The biological analysis of plant form used in Saudi natural remedies showed the dominance of herb and subshrub form with a percentage of 43% and 30% respectively. The most used preparation method of plant drugs, which used in Saudi Alternative medicine was decoction and infusion. The whole plant, leaves, seeds, and aerial parts were the most useful plant parts in natural preparation in Saudi traditional medicine with a percentage of 29%, 28%, 7%, and 5% respectively as reported in the present review work. The present review work gives big data about medicinal plants used in traditional medicine in the Kingdom of Saudi Arabia including data about plant species, used parts, preparation method as well as medical uses.

Keywords:
Medicinal plants
Saudi Arabia
Ethnopharmacology
Traditional medicine
Folk medicine
1. Introduction

Medicinal plants have become a worldwide topic drawing an impact on world health. Herbal medicine has played a crucial role in the maintenance of the healthcare system of the wide population throughout the world (Akerere, 1988). This is majorly enhanced in less-developed or developing countries, where the history use of traditional medicine interrupted. The knowledge and the progress of the medical benefits of herbs have grown in both, developing and developed countries (Organization, 1998). Medicinal herbs have constituted the basis of alternative medicine and lead to be the main pathway for conceptualizing new drugs (Newman et al., 2000). At an earlier time of the nineteenth century, more than 80% of Medicine was formulated from plants, and especially after the scientific revolution, the field of herbal medicine has conducted the evolvement of the pharmaceutical industry where the synthesized drugs noticeable (Shinwari and Qaiser, 2011). The larger use of medicinal plants in the treatment of diseases is due to one hand that plants or their derivatives are considered as safe and effective drugs, as well as with fewer secondary effects and are low in cost (Odhav et al., 2013). The alternative medicine knowledge based on the use of plants in treatment represents an inheritance passed from generation to upcoming over centuries either verbally or in writing, taking into account that the traditional inheritance may be facing extinction if it is not transmitted to next generation and still limited to former only (Schulze, 2017).

Folk medicine took place in the Kingdom of Arabia Saudia by 1940 with less demand for traditional medicine. Meanwhile, since 1990 the Saudi people changed their thinking towards traditional medicine and have increased its use in common life (Organization, 2001). Numerous ethnobotanical surveys carried out in Saudi Arabia showed that a large proportion of Saudi citizens are dependent on traditional medicine whether alone or associated with modern medicine (Bodeker and Ong, 2005).

An ethnopharmacological survey targeted the use of medicinal plants belong Saudi citizens showed that 80% of the interviewed have used herbal medicine for medications. It was reported in another study that 20% and 70% of the asked people using the herbal medicine for chronic and acute conditions respectively (Alanzi et al., 2016).

The usage of herbal medicine belongs the Saudi patients in the treatment of diseases like cancer, asthma, neurological and hepatic diseases was reported around 55%, 80% and 42.3%,90% respectively (Jazieh et al., 2012; Al Moamary, 2008; Mohammad et al., 2015). 81.2% of Saudi citizens living in Riyadh city were asked about their opinion regarding the use of herbal medicine, they consider that the use of this model of medicine in treatment is still safe and harmless as reported previously (Suleiman, 2014). Another study took place in Jeddah reported among diabetic patients 64% prefer to use herbs to control diabetes. In this study, it was reported that 55.1% of Jeddah citizens prefer the use of plants rather than synthesized drugs and around 75.2% simultaneously use both, herbs and prescribed drugs (Kamel et al., 2017).

The current review was conducted to gather information about the plants used by Saudi citizens in traditional medicine, such as to highlight the description of medicinal plants including local name, the parts used, the preparation methods as well as traditional uses.

2. Materials and methods

2.1. Study area

Saudi Arabia is the third biggest country in the Asian continent after China and India. Geographically, the Kingdom of Saudi Arabia is found on the Arabian Peninsula in the Middle East, located east of the Red Sea and west of the Persian Gulf.

Its coordinates are defined as 2500N, 04500E. It covers most of the Arabian Peninsula area and is connecting Africa and Eurasia (Fig. 1).

2.2. Data collection

Previously published data in journals, textbooks, periodicals, websites, databases and folklore information written in pharmacological profile and traditional uses of Saudi medicinal plants were checked for collecting information.

3. Results and discussion

3.1. Ethnomedical data about medicinal plants used in traditional medicine in the Kingdom of Saudi Arabia

The fruits of the present review of ethnomedical plants used in traditional medicine in the Kingdom of Saudi Arabia are summarised in Table 1.

The present survey reported that 96 species springing from 47 families have been used in Saudi Pharmacopeia (Table 1). Amaranthaceae has the highest number of plant species (7) Followed by Asteraceae, Apocynaceae, and Fabaceae with 5 plant species in each. The present data were in accordance with other previous literature (Alfarhan et al., 1998a), in which it was reported that these mentioned families were the mostly used in traditional medicine in Saudi Arabia.

Data presented in Table 1 shows several plant species, frequently used for the treatment of various illnesses associated with skin and stomach diseases, respiratory tract infections, tuberculosis antipyretic, inflammations, anasarca, cancer, astringent, convulsions, cough, cramps, diarrhea, dysentery, headache, hypertension, snakebite, sores decreasing thirst, enhancing hunger monitor of adverse outcomes, medication safety, diuretic, alterative, antiperiodic and purgative.

The most cited plant families in the present work were Asteraceae, Fabaceae, Lamiaceae, Amaranthaceae, Asteraceae, Asclepiadaceae, Apocynaceae, Acanthaceae, Apiaceae and Poaceae, Annonaceae, Zingiberaceae, and Brassicaceae. All these plant families, as well as others reported in the present review, have been previously investigated in Saudi’s flora (Alfarhan et al., 1998a; b; Hostettmann et al., 2000).

It was reported that herbal medicine used traditionally for disease treatment, also used as a precursor for the development of several promising drugs (Balunas and Kinghorn, 2005; Hostettmann et al., 2000). The present work highlights these practices from an ethnopharmacological survey by targeting 96 medicinal plant species frequently used by almost all Saudi Arabian people (Table 1).
3.2. Biological form of plants used in Saudi Arabia traditional medicine

The biological analysis of plants used in Saudi natural remedies showed the dominance of herb and subshrub forms with a percentage of 43% and 30% respectively. The shrub and tree were also reported with a low percentage of 6% and 21% respectively (Table 2). These results were in agreement with earlier found data which reported that the most biological form of plants used in traditional medicine was subshrub, shrub, and herb (Bourhia et al., 2019).

3.3. Preparation method of plant drugs

According to our review report, the commonly used preparation methods of plant drugs in Saudi alternative medicine were decoc-tion and infusion. Maceration at room temperature, powder mixed with honey-milk-oil, cooked, uncooked plants and external use were also documented with lower values.

3.4. Plant parts used

Leaves, whole plant, seeds, and aerial parts were the commonly used parts in natural preparation in Saudi traditional medicine with a percentage of 29%, 28%, 7%, and 5% respectively as reported in the present review work. Roots, stem, latex, bulb, fruits, and bark were also presented with a low percentage (Fig. 2).

Desiring to contribute to the conservation priorities of herbal knowledge of various medicinal plants of Saudi Arabia and to make it easy and familiarized with disease treatment, the present compilation was carried out.

According to previously reported data, the knowledge of traditional medicine could be facing extinction if it is not inherited from the previous generation to the upcoming. Several factors inducing loss of this knowledge associated with local culture, physical and biological environments such as lack of expertise of the modern people, acculturation, and rural exodus (Bourhia et al., 2019).

It was reported that ethnic and religious people throughout the world, to know the vegetal diversity of one another because a huge number of plant species have been facing extinction due to the pressure exercised by the consumers and environmental conditions. The phenomena of plant extinction could translate to lose at least one potential drug every two years (Robertson, 2008a). Each plant species lost due to extinction could represent not only the loss of healthcare saving cures for special diseases but also the loss of a probable primary metabolite like protein-or vitamin-rich foods (Robertson, 2008b).

In order to protect the germplasm of plants and to ensure sustainability, the public should learn the importance of herbal med-
Table 1
Summary of ethnopharmacological data about medicinal plants used in the Kingdom of Saudi Arabia.

| Plant family | Plant species | Local name | Used parts | Medicinal uses/activities | References |
|--------------|---------------|------------|------------|---------------------------|------------|
| Malvaceae    | Abutilon     | Verdc      | Whole plant| Antimicrobial             | (Akbar and Al-Yahya, 2011) |
|              | pannosum     |            | Aerial     | Boils, inflamed purulent wounds, and swellings | (El-Ghazali et al., 2010) |
|              | Malva parviflora |          | Aerial     | Haemorrhae, diarrhoea, scurry, dysentery scurry, and colds | (Al-Musayeb et al., 2012) |
| Fabaceae     | Acacia arabica |            | Whole plant| Skin and stomach diseases, Curative for chronic rheumatism and tumor | (Marwat et al., 2012) |
|              | Rhazya stricta | Harmal     | Aerial parts| Regulate blood glucose, athelminetic, antiscorbutic, astrigent, stomachic and toothache. | (Kaunda and Zhang, 2017) |
| Apocynaceae  | Carissa edulis |            | Leaves and | Used in bones dislocations, wounds, skin infections, paralysis and painful joints | (Ghazanfar, 1994) |
|              | Adenium      | Adnah      | Whole herb and bark | Sthma, diabetes mellitus, corns | (Bokhari, 2009a) |
|              | arabicum     |            | Areal parts| Headache                   | (Bokhari, 2009) |
|              | Nerium       | Difla      | Flower, Leaves, Roots | Reducing blood glucose | (Al-Shaqua et al., 2015) |
|              | oleander     |            | Phloem | Anthemillic night-blindness | (El-Ghazali et al., 2010) |
|              | Adenium      | Adne       | Areal parts| Diuretic, antimicrobial effect, and central nervous system stimulation | (El-Ghazali et al., 2015) |
|              | obesum       |            | Whole plant| Toothache                   | (El-Ghazali et al., 2010) |
| Boraginaceae | Alkanna      | –          | Plant | Diuretic, antiperiodic purgative, astringent stomachache, bowel complaints piles, boils and skin eruptions. | (Al-Asmari et al., 2017) |
|              | hispidissima | Keha      | Whole plant| Antihypergaemic, -urothlic , astringent Purgative, diuretic and demulcent | (Adepu et al., 2013) |
|              | Aerva        | Tourism    | Whole plant| Treating hepatitis, tight chest, bronchitis, asthma | (Bokhari, 2009) |
|              | javanica     |            |            | Emollient in scorpion sting | (Saqib and Janbaz, 2016) |
|              | Anisotes     | Roth       | Leaves | Diuretic, blood purifier, treatment of piles, strangury, and abortifacient used as an abortifacient | (Adel-Kader et al., 2018) |
|              | asperns      | Medh       | Leaves | Antipyretic, diuretic, emollient, expectorant, stomachic. leucorrhoea and leprosy | (Watt and Breyer-Brandwjik, 1962) |
|              | Aerva        | Shult      | Leaves | Purgative, diuretic and demulcent | (Chopra, 1956) |
|              | lanata       |            |            | Treating leukemia and cancer | (Yadav et al., 2007) |
|              | Achyrantes   | Malwat     | Whole plant| Diuretic and tonic, laxative | (Champy, 2011) |
|              | asperns      | Tamil      | Leaves | Treating of leukaemia and cancer | (Madaan and Kumar, 2012) |
|              | Alternanthera sessilis | Tamil | Leaves | Antimycobacterial, Antifungal, psychoactive, insecticides, hallucinogenic and insecticides | (Al-Asmari et al., 2014) |
|              | Amaranthus spinosus | Qutaifa | Stem, | Emollient in scorpion sting | (Jirovetz et al., 2003) |
|              | Amaranthus coudatus | Kaf | Leaves | Diuretic, blood purifier, treatment of piles, strangury, and abortifacient used as an abortifacient | (Watt and Breyer-Brandwjik, 1962) |
|              | Amaranthus viridi | Shae | whole herb | Antipyretic, diuretic, emollient, expectorant, stomachic. leucorrhoea and leprosy | (Chopra, 1956) |
|              | Chenopodium ambrosiodes | Errwa | Leaves | Diuretic and tonic, laxative | (Champy, 2011) |
|              | Annona squamosa | Qishda | Leaves, roots | Treatment of leukaemia and cancer | (Madaan and Kumar, 2012) |
|              | Carum carvi | Karawiya | Root | Neurological digestive, for gynaecological and urological problems, Infusion, ground Analgesic | (Alqethami et al., 2017) |
|              | Conium       | Hemlock    | Flower and stem leaves | Treatment of diseases of the prostate, liver, and spleen | (Al-Asmari et al., 2014) |
|              | maculatum crispus | Magdnus | Leaves | Antimycobacterial, Antifungal, psychoactive, insecticides, hallucinogenic and insecticides | (Jirovetz et al., 2003) |
|              | Aneithum | Dill | whole herb | Antimycobacterial, Antifungal, psychoactive, insecticides, hallucinogenic and insecticides | (Abdel-Kader et al., 2018) |
|              | Desmdirchis retrospiciens | Gholtha | Areal | Chickenpox- smallpoxmeasles | (Abdel-Kader et al., 2018) |
|              | Monolluma quadrangula | Gelf | Parts | Influenza-diabetes | (Abdel-Kader et al., 2018) |
|              | Sarcozoonia viminale | Al Ashr | latex | Wounds | (Abdel-Kader et al., 2018) |
|              | Ceropegia variegata | Drat Elkelt | Aerial part | Taeafuge | (Abdel-Kader et al., 2018) |
| Asteceae      | Artemisia judaica | Beithran | Areal parts | Cough – cold | (Abdel-Kader et al., 2018) |
|              | Achillea fragrantisma | Gaisom | Leaves | Used as anti-inflammatory, antimicrobial activity | (Saidnia et al., 2011) |
|              | Artemisia herba-alba | Chih | Leaves | Dental hygiene, abdominal pain, colic and liver failure | (Mohammed et al., 2018) |

(continued on next page)
| Plant family | Plant species | Local name | Used parts | Medicinal uses/activities | References |
|--------------|---------------|------------|------------|---------------------------|------------|
| Fabaceae     | Lupinus albus | Trimees    | Seeds      | Diuretic, emmenagogue, hypoglycemic and vermifuge | (Knecht et al., 2006) |
|              | Trigonella foenum-graecum | Lhelba    | Seeds      | Anti-diabetic, anti-inflammatory, diuretic, antiradicalic | (Mehrifarir et al., 2011) |
|              | Alhagi graecorum | Aqool     | Whole plant | Analgesic, Anti haemorrhoides, anti-tussine, Anti haemorrhoides, aphrodisiac, diuretic and laxative | (El-Shabasy, 2016) |
|              | Alhagi maurorum | Al -Agool  | Leaves     | Antioxidant, antinociceptive, antiseptic, antihypertensive, expectorant, carminative, diuretic, emmenagogue and sedative, taken in whooping cough, bronchitis and colds | (Ahmad et al., 2000; Leung, 1980) |
|              | Astragalus spinosus | Bobrai   | Stem and leaves | Good digestion, migraine, depression, kidney malfunction and skin infections | (Adhani et al., 2014) |
|              | Olearia azetoni | Lebes     | Leaves     | Gingivitis, otitis, icterus, cough, Aesthetic, liver diseases, thrush, dental caries, oesophageal swelling, ulcers, oedemas, wound demulcent, emollient, cholagogue, calculi and diabetes. | (Hashmi et al., 2015) |
|              | Allium cepa | Basar     | Bulb       | Assam, Mizarom, Nagaland, Meghalaya, Arunachal Pradesh and Sikkim | (Borborah et al., 2014) |
|              | Allium sativum | Thom     | Bulbs      | Anti-septic, anti-hypertensive | (Abdallah, 2017) |
|              | Allium ampeloprasum | –       | Leaves     | Antimicrobial | (Alamri and Moustafa, 2012) |
|              | Aloe vera | sebra     | Whole plant | As laxative, peptic ulcers, in asthma, and diabetes | (Syed et al., 1996) |
|              | Asphodelus tenuifolius | Broque  | seeds      | Colds, haemorrhoids and rheumatic pain | (Abdel-Mogib and Basaib, 2002) |
|              | Opuntia ficus-indica | Tin Shokai | Stems and fruits | Antidiabetic, Hypoglycemic | (Osuna-Martínez et al., 2014) |
|              | Ficus indicus | Gethgath  | Whole herb | Used to treat leukemia, wound healing | (Bedir et al., 2000) |
|              | Azadirachta indica | Neem     | Whole plant | Used as antifungal | (Aly and Bafeel, 2010) |
|              | Lamiaceae     | Teucrimum polium | Giadah | Leaves | Hypolipidemic, Hypoglycemic, treat liver disease, jaundice, diabetes, fertility problems and cancer. | (Djordjevic et al., 2018; Ljubuncic et al., 2005) |
|              | Salvia officinalis | Meramiah  | Leaves     | Treatment of heartburn and bloating | (Ghorbani and Esmaeizadeh, 2017) |
|              | Acanthaceae   | Belpharis ciliaris | Shok aldab | Whole herb | Used to treat toothache and skin wounds | (El-Ghazali et al., 2017) |
|              | Lauraceae     | Cinnamomum burmannii | Ghr     | Leaves | Analgesic, anti-diabetic, anti-arthritis, anti-thrombotic | (Al-Dhubiab, 2012) |
|              | Laurus nobilis | Ghr     | Leaves | Astringent, stomachic, stimulant and narcotic | (Chalumeau and Benito-espinal, 1984) |
|              | Capparidaceae | Cadaba farinose | Asef      | Whole herb | Used as a purgative, antihelminthic, emmenagogue, antiphilptic, aperient, a remedy for dysentery, fever, cough and lungs problem | (El-Shabasy, 2016) |
|              | Capparis cartilaginea | Shafallah | Whole herb | Antiseptic, laxative, antiseptic and anti-inflammatory | (Al-Shawawi, 1996) |
|              | Capparis deciduas | Tandhab  | Whole herb | Analgesic, aphrodisiac carminative, laxative and diaphoretic, antihelminthic and emmenagogue | (Ageel et al., 1986) |
|              | Caralluma sinaica | Did Elkalba | Whole plant | Antiprotozoal | (Al-Musayib et al., 2012) |
|              | Lythraceae    | Punica granatum | Roumon    | Fruit | Cancer, cardiovascular disease, diabetes | (Bhowmik et al., 2013) |
|              | Myrtaceae     | Syzygium aromaticum | Kronful | Flower | Treatment of toothache, mouth, throat inflammation and gastrointestinal disorders. | (Bhowmik et al., 2012) |
|              | Pedaliaceae   | Sesamum indicum L. | Snsim     | Seeds | Improve nutritional status prevention of diseases | (Moazzami and Kamal-Eldin, 2009) |
|              | Ranunculaceae | Nigella sativa | Hbsoura   | Seeds | Monitor of adverse outcomes, medication safety, patient compliance | (Al Jaouni et al., 2012) |
Table 1 (continued)

| Plant family | Plant species | Local name | Used parts | Medicinal uses/activities | References |
|--------------|---------------|------------|------------|----------------------------|------------|
| Rhamnaceae   | Ziziphus spina christi | Sider | Leaves | Treatment of pulmonary ailments and fevers | (Asgarpanah and Haghighat, 2012) |
| Zingiberaceae| Curcuma longa | Karcum | Roots | Relieving gas, improving digestion, regulating menstruation, relieving arthritis, antioxidant, anti-inflammatory, antiplatelet, antimicrobial and cholesterol lowering | (Benzie and Wachtel-Galor, 2011) |
|              | Zingiber officinalis | Zingabil | Rhizome | Treatment of heart diseases and lungs, relief cough and cold, throat infection and besides | (Kumar Gupta and Sharma, 2014) |
| Tamaricaceae | Tamarix aphylla | Athil | Leaves Rhizome | Infection of wound, Stomach ache | (El-Ghazali et al., 2010) |
| Liliaceae    | Asphodelus fistulosus | Al-Himaar | Aerial parts | Stimulant, laxative, diuretic and crushed treatment of ulcer; used to make cakes of boiled, anthelmintic and Stomach ache | (Qureshi et al., 2010) |
| Poaceae      | Dactyloctenium aegyptium | Behma | Whole herbs | Wound sepsis | (El-Ghazali et al., 2010) |
|              | Panicum turgidum | Temam | Whole herb | Eye infection | (El-Ghazali et al., 2010) |
|              | Cynodon dactylon | Thil | Whole plant | Treatment of anasarca, cancer, convulsions, cough, cramps, diarrhea, dysentery, headache, hypertension, snakebite, sores | (Nagori and Solanki, 2011) |
| Brassicaceae | Farsetia aegyptica | Jerbaa | Whole herb | Toothache, gingivitis and rheumatism | (Sakkir et al., 2012; El-Ghazali et al., 2010) |
|              | Eruca sativa | Roucka | Seeds | Anticancer, antiulcer, diuretic | (JAAFAR and JAAFAR, 2019) |
| Papaveraceae | Anastatica hierochuntica | Khaf | Whole herb | Anti-diabetic activity | (Rahman et al., 2002) |
|              | Argemone Mexicana | Maryam | Whole plant | Facilitate maternity | (Akbar and Al-Yahya, 2011) |
| Polygonaceae | Emex spinosa | Hambaaz | Whole herb | Appetizer, biliousness, and to stimulate appetite | (El-Ghazali et al., 2010) |
|              | Calligonum comosum | Artaa | Whole herb | Anti-inflammatory and anti-ulcer effect | (Kamil et al., 2000) |
| Asclepiadaceae| Calotropis procera | Oshar | Latex | Used to treat psoriasis, leishmaniasis, and skin infections | (El-Ghazali et al., 2010) |
| Chenopodiaceae| Anabasis setifera | Hand | Leaves | Anti-inflammatory | (Abdou et al., 2013) |
| Caesalpinaceae| Cassia italica | Sanamakka | Whole herb | Laxative and urinary tract purifier | (El-Ghazali et al., 2010) |
| Resedaceae   | Reseda muricata Pres. | Danban | Fruit | Menstruation tonic | (El-Ghazali et al., 2010) |
| Euphorbiaceae| Chrozophora oblongifolia | Tannom | Roots | Heating | (Sher and Aldosari, 2013) |
|              | Acalypha fruticosa | mchacha root | Root in goat bone soup and drink the soup to treat liver problems | (Sripathi and Sankari, 2010) |
|              | Acalypha indica | Anama | whole herb | Cure from bronchitis, and asthma, pneumonia | (Yusuf et al.) |
| Tamaricaceae | Tamarix aphylla | Cedaar | Leaves | Treating wounds | (Emad and Gamal, 2013) |
| Zygophyllaceae| Tribulus terrestris | Tikandu | Seeds | Tonic, diuretic, and aphrodisiac | (Al-Asmari et al., 2014) |
| Typhaceae    | Typha domingensis | Pardey | Whole plant | Cardiac depression | (Akbar and Al-Yahya, 2011) |
| Tiliaceae    | Grewia tenax Aub | Aerial parts | | Liver disorder | (Al-Said et al., 2011) |

Table 2
Plant species and habits.

| Plant species | Habit | Photograph |
|---------------|-------|------------|
| Rhazya stricta | Subshrub | ![Rhazya stricta](image1) |
| Adenium obesum | Tree | ![Adenium obesum](image2) |
| Nerium oleander | Subshrub | ![Nerium oleander](image3) |
| Blepharis maderaspatensis | Herb | ![Blepharis maderaspatensis](image4) |

(continued on next page)
| Plant species       | Habit  | Photograph |
|---------------------|--------|------------|
| Anisotes trisulcus  | Shrub  | ![Shrub](image) |
| Aerva javanica      | Subshrub | ![Subshrub](image) |
| Achyranthes aspera  | Herb   | ![Herb](image) |
| Aerva lanata        | Herb   | ![Herb](image) |
| Alternanthera sessilis | Herb | ![Herb](image) |
| Amaranthus spinosus | Herb   | ![Herb](image) |
| Chenopodium ambrosioides | Herb | ![Herb](image) |
| Annona squamosa     | Tree   | ![Tree](image) |
| Carum carvi         | Herb   | ![Herb](image) |
| Plant species            | Habit     | Photograph |
|-------------------------|-----------|------------|
| Artemisia herba-alba    | Subshrub  | ![Artemisia herba-alba](image1) |
| Francoeuria crispa      | Subshrub  | ![Francoeuria crispa](image2) |
| Loranthus acaciae Zucc. | Tree      | ![Loranthus acaciae Zucc.](image3) |
| Capparis spinosa        | Subshrub  | ![Capparis spinosa](image4) |
| Oymphopogon citrates    | Subshrub  | ![Oymphopogon citrates](image5) |
| Lantana camara          | Subshrub  | ![Lantana camara](image6) |
| Ocimum basilicum        | Herb      | ![Ocimum basilicum](image7) |
| Allium cepa             | Herb      | ![Allium cepa](image8) |
| Opuntia Ficus-indica    | Shrub     | ![Opuntia Ficus-indica](image9) |
| Lupinus albus           | Herb      | ![Lupinus albus](image10) |
| Trigonella foenum-graecum | Herb    | ![Trigonella foenum-graecum](image11) |
| Teucrium polium         | Subshrub  | ![Teucrium polium](image12) |
| Salvia officinalis      | Herb      | ![Salvia officinalis](image13) |
| Cinnamomum burmannii    | Tree      | ![Cinnamomum burmannii](image14) |
| Laurus nobilis          | Shrub     | ![Laurus nobilis](image15) |
| Punica granatum         | Tree      | ![Punica granatum](image16) |
| Syzygium aromaticum     | Tree      | ![Syzygium aromaticum](image17) |
| Sesamum indicum         | Herb      | ![Sesamum indicum](image18) |
| Plant species          | Habit    | Photograph |
|------------------------|----------|------------|
| Nigella sativa         | Herb     | ![Nigella sativa](image) |
| Ziziphus spina christi | Tree     | ![Ziziphus spina christi](image) |
| Curcuma longa          | Herb     | ![Curcuma longa](image) |
| Cassia italica         | Subshrub | ![Cassia italica](image) |
| Zingiber officinale    | Herb     | ![Zingiber officinale](image) |
| Tamarix aphylla        | Tree     | ![Tamarix aphylla](image) |
| Asphodelus fistulosus  | Herb     | ![Asphodelus fistulosus](image) |
| Dactyloctenium aegyptium | Herb | ![Dactyloctenium aegyptium](image) |
| Panicum turgidum       | Subshrub | ![Panicum turgidum](image) |
| Cynodon dactylon       | Herb     | ![Cynodon dactylon](image) |

| Plant species          | Habit     | Photograph |
|------------------------|-----------|------------|
| Farssetia aegyptiaca   | Herb      | ![Farssetia aegyptiaca](image) |
| Eruca sativa           | Herb      | ![Eruca sativa](image) |
| Emex spinosa           | Herb      | ![Emex spinosa](image) |
| Anabasis setifera      | Subshrub  | ![Anabasis setifera](image) |
| Malva parviflora       | Herb      | ![Malva parviflora](image) |
| Reseda muricata Presl. | Herb      | ![Reseda muricata Presl.](image) |
| Chrozophora oblongifolia | Subshrub | ![Chrozophora oblongifolia](image) |
| Tribulus terrestris    | Herb      | ![Tribulus terrestris](image) |
| Grewia tenax           | Tree      | ![Grewia tenax](image) |
| Plant species       | Habit       | Photograph |
|---------------------|-------------|------------|
| Abutilon pannosum   | Subshrub    |            |
| Acacia arabica      | Tree        |            |
| Carissa edulis      | Tree        |            |
| Olea europaea       | Tree        |            |
| Adenium arabicum    | Subshrub    |            |
| Catharanthus roseu  | Herb        |            |
| Albizzia lebbeck    | Tree        |            |
| Alkanna orientalis  | Subshrub    |            |
| Arnebia hispissima  | Subshrub    |            |

| Plant species       | Habit       | Photograph |
|---------------------|-------------|------------|
| Achyranthes aspera  | Herb        |            |
| Amaranthus caudatus | Subshrub    |            |
| Amaranthus viridi   | Herb        |            |
| Anethum graveolens  | Subshrub    |            |
| Anvillea garcinitii | Subshrub    |            |
| Allium ampeloprasum | Herb        |            |
| Asphodelus tenufolius| Subshrub    |            |
| Alhagi graecorum    | Subshrub    |            |

(continued on next page)
icine and all tools should be serving this inheritance. The people need to become acquainted with the medicinal plant uses, not only but to cultivate the plants on the farms, gardens even in their houses if possible for enriching the plant diversity. Rational use of medicinal plants in medication minimizes the high cost of treatment with modern medicine and minimizes the side effects due to the use of modern drugs (Saganuwan, 2009).

4. Conclusion

All the medicinal plants reported in the current review work have been used in Saudi traditional medicine for the treatment of different human diseases. However, the investigated plants in the present review need further studies covering specific screening of natural products, pharmacological and biological activities as well as a safety control. These Data Open window for Researches to use it and develop new molecules as well as, to continue studying the effects of extracts and isolated chemicals derived from these plants for their health benefits, in important diseases.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Table 2 (continued)

| Plant species     | Habit     | Photograph |
|-------------------|-----------|------------|
| Astragalus spinosus | Subshrub  | ![Image](image1.png) |
| Azadirachta Indica | Tree      | ![Image](image2.png) |
| Belpharis ciliaris  | Subshrub  | ![Image](image3.png) |
| Cadaba farinose   | Shrub     | ![Image](image4.png) |
| Capparis cartilagnia | Subshrub | ![Image](image5.png) |
| Capparis deciduas | Shrub     | ![Image](image6.png) |
| Anastatica hierochuntica | Subshrub | ![Image](image7.png) |
| Caralluma sinaica | Herb      | ![Image](image8.png) |
| Argemone Mexicana | Herb      | ![Image](image9.png) |
| Calligonum comosum | Saushrub  | ![Image](image10.png) |
| Calotropis procera | Shrub     | ![Image](image11.png) |
| Acalypha fruticosa | Subrub    | ![Image](image12.png) |
| Acalypha indica   | Herb      | ![Image](image13.png) |
| Typha domingensis | Herb      | ![Image](image14.png) |
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