



# A Critical Review Of Medicinal Plants Of Arabia And United Kingdom Their Active Ingredients And Uses In Health

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## ABSTRACT

Arabian Peninsula is an arid region with deserts and poor biodiversity. However, the Kingdom of Saudi Arabia has a wide range of plants, consisting of different types of trees, herbs, and shrubs, and contains many edible and medicinal plants. Medicinal plants occupy an important source of effective drugs in the treatment of various diseases, so these medicinal plants have become a global topic that has an impact on the health of the world. In this paper, we will refer to identifying the nature of medicinal plants, clarifying the components of some medicinal plants, and their various effects and medicinal benefits. List of various medicinal plants in the Kingdom of Saudi Arabia and their used parts and medicinal uses.

**KEYWORDS:** Medicinal plants, Saudi Arabia, Alkaloids, Flavonoids

## INTRODUCTION

Some of the plants caused illness, the second caused nausea, and others caused diarrhea or constipation, relieved stomach pain, or calmed the nerves. The ancients used them to treat diseases by taking wild plants or parts of them in their natural state and putting them on the sick part or member of the person (Petrovska, 2012). There is no disease without medicine. Man has sought to search for plants that reduce this or that pain since ancient times, as historical sources tell us that the history of herbal medicine has played an important role in maintaining the health care system for a large number of the population all over the world (Karunamoorthi *et al.*, 2013). In the world, medicinal herbs formed the basis of alternative medicine and led to it being the main path for the conception of new medicines, and until the early nineteenth century (Pan *et al.*, 2014). more than 80% of medicines were formulated from plants (World Health Organization, 2013). Especially after the scientific revolution, the field of herbal medicine led to the development of industry (Ullah *et al.*, 2020)

The knowledge of alternative medicine based on the use of plants in treatment represents an inheritance passed from one generation to another over the centuries, whether orally or in writing, bearing in mind that the traditional inheritance may face extinction if it is not passed on to the next generation and is still limited to the previous one using only different plant species (Al Akeel *et al.*, 2018). In medicine since ancient times, folk medicine is still a major reference in the Arabian Peninsula, and many medicinal plants are still used today, including garlic, pomegranate, black seed, costus, miswak, henna, ginger, and fenugreek (Aati *et al.*, 2019). These are all It can be effective in treating human diseases.

The difference is only in the quantity of the dose given, as the plant may be curative in a small dose and fatal in a larger dose. Here, we must take care, caution, and accuracy in determining the doses when using these plants (Ekor, 2014). Medicinal plants are those that have therapeutic capabilities and can be obtained from nature or agriculture. These medicinal plants can also be used "soft" or dried, or the raw material can be used in the manufacture of various liquid and solid extracts (Mahomoodally, 2013). Its importance increases with the progress of civilization, the increase in the need for medicine, and the expansion of its uses. And some medicinal plants are also used for other purposes, such as spices, food oils, and essential oils that are used in the manufacture of cosmetics, perfumes, and pesticides, which has increased interest in these plants in many countries of the world (Ogunola, 2021)

## DEFINITION OF MEDICINAL PLANTS

A medicinal plant is defined as any plant species that contain secondary metabolites that can be used for medicinal uses or can be used as precursors for the manufacture of novel therapeutics (Penso, 1980). It is a plant that contains one or more of its organs, materials that can be used for treatment purposes or primary materials to form useful drugs. These plant materials are often divided into primary and secondary receptors, Sofowora *et al.* (2013) were also aware that a medicinal plant is defined as a plant that has one or more of its different organs or mutations on one or more chemicals with a low or high concentration and the physiological ability to treat a specific disease. The term "medicinal plant" refers to many different plant species utilized in herbalism ("herbology" or "herbal medicine"). It involves both the study of and use of plants for therapeutic purposes (Khan, 2016).

Medicinal plants are also an important source of effective drugs in the treatment of various diseases, especially in traditional medicine (Bako *et al.*, 2005; Borokini and Omotayo, 2012). Various parts of the plant are used in traditional medicine, including bark, flowers, fruits, leaves, resins, roots, seeds, and stems. The medicinal value of these plants is in some effective chemical compounds in different parts of the plants that produce a specific physiological effect on the human body (Kumar and Satapathy 2011).

## THE IMPORTANCE OF MEDICINAL PLANTS AND THEIR USES

Medicinal plants and drugs extracted from them are of great economic value, of special importance, for several reasons, the most important of which is medicinal plants represent the main part of the raw materials on which the drug industry is based, and the drug industry is one of the strategic industries, as there is a need to impose their Public health safety and continued preparation for providing the largest possible amount of the mouth, especially in cases of epidemic and natural disasters, in which import and export cannot, as well as cultivate medicinal plants and the industries based on them in order to achieve self-sufficiency, and export the surplus from them to bring a source of reassurance in the currencies Difficult and from here comes the importance and care of medicinal plants.

### THE USES OF MEDICINAL PLANTS ARE AS FOLLOWS:

- Medicine for the treatment of many diseases, is the main and distinctive characteristic of medicinal plants, as the medicinal plant is a drug to treat diseases, whether it is taken directly from nature, such as cumin, anise, chamomile, and black seed, or a laboratory making with extraction such Eye pupils, ovens extracted from the poppy plant, and glycosides.
- Direct food for humans: medicinal plants, like other plants, enter into the daily human food directly, such as pulses rich in carbohydrates and vitamins such as beans, lentils, chickpeas, beans, and other grains rich in proteins. Flacks, spices, and spices: There are many medicinal plants today used as flavors and spices such as cloves, saffron, ginger, turmeric, students, black and red pepper, and vanilla, which are parts of medicinal plants used as flavors and fibers.
- The manufacture of vegetable oils such as castor oil, sunflower oil, corn, linen, and sesame, as these oils are included in the pharmaceutical and food industries. In addition to the perfume industry, as some medicinal plants are included in the industry of scents and perfumes, such as the types of rose, especially gori, jasmine, jasmine, and basil.

- Medicinal plants play an important role in decorating public and home parks, some of which are in the form of seasonal herbs such as poppy with red or colored flowers, chrysanthemum plants with yellow or orange flowers, and some in the form of shrubs such as the stove, cloves, jasmine, pine an, Some are planted to provide concentrated feed for poultry such as soybeans and yellow corn, and animals feed on many natural medicinal plants that make up natural pastures
- Some medicinal plants play a role in improving the environment such as improving the physical and chemical properties of the soil and increasing their fertility, and their fallen leaves and roots help improve the strength of soil and signal from nitrogen loss.

## INGREDIENTS FOR MEDICINAL PLANTS

The medicinal value of these plants lies in some effective chemical compounds in different parts of the plant that produce a specific physiological effect in the human body. Vegetable compounds are biologically active compounds that are naturally found in plants. These plant materials are often divided into primary and secondary receptors. The initial fluctuations are essential for plants and are involved in the primary metabolism for planting plant cells. They are often found between the top plants inside the seeds and vegetative storage organs as well. For example, fatty acids and vegetable oils are used in the production of soap and detergents. The most important vegetable chemical groups in this regard are alkalis, glycosides, flavonoids, tannins, soaps, and resins that have medical properties. Alqethami and Aldhebani (2021) examined 85 medical plants found that contain alkaloids, glycosides, flavonoids, tannin, soap, and resin using standard methods. The most common plant chemical compounds distributed among the medicinal plants used were glycosides (82 %, 70 species), tannins (68 %, 58 species), alkaloids (56 %, 48 species), soap (52 %, 44 species) and flavonoids (35 %, 30 species), and on the other hand, the least prevalent compounds were resin (31 %, 26 species).

### GLUCOSIDE

It is having wide medical effectiveness because they are present in almost all medicinal plants. It has been shown that glycosides have sedative, digestive properties, sputum, and anti - cancer. Also, tannins help heal wounds and mucous membranes. Plant extracts containing tannins are used as holding drugs, against diarrhea, such as diuretics, As anti - inflammatory drugs. Also, alkaline, soaps and flavonoids are also known as sedative properties and have a strong effect on the nervous system.

### TANNINS

They are polyphenols, which have antiseptic and antibacterial affects (Anderson *et al.*, 2012). It was found in 15 species and was the most common distributed compound in most plants in Wadi Yalmlam, one of the important Wadies in Saudi Arabia. Examples of plants that contain tannins such as *Aerva javanica*, *Spergula fallax*, *Cleomehanburyana* and others (Aldhebani and Mufarah, 2017).

### RESINS

They are by - products of plants that are not soluble in water, harden when exposed to air, typically generated by woody plants, such as *Commiphora myrrh* whose aqueous extract can antimicrobial activities against several pathogenic microbes (Alwhibi *et al.*, 2020),

### TERPENOIDS

The largest and most diverse class of naturally occurring compounds is the terpene family. They are divided into the categories of mono, di, tri, tetra, and sesquiterpenes based on the quantity of isoprene units they contain. They are primarily present in plants and make up the bulk of essential oils made from plants, the common plant sources of terpenes are tea, thyme, cannabis, Spanish sage, and citrus fruits e. g., lemon, orange, mandarin (Cox - Georgian *et al.*, 2019). Essential plant scents like eucalyptus, lavender, thyme, and mint, as well as tastes like cinnamon, clove, and ginger, and colors like yellow from sunflowers and red from tomatoes, are all influenced by terpenoids (Alamgir, 2018).

## ALKALOIDS

They are organic compounds with at least one nitrogen atom in a heterocyclic ring. Important secondary metabolites are recognized to provide medicinal benefits. Alkaloids have been divided into many groups based on their biosynthetic precursor and heterocyclic ring system, including indole, piperidine, tropane, purine, pyrrolizidine, imidazole, quinolizidine, isoquinoline, and pyrrolidine alkaloids (Roy, 2017). Wild Syrian rue (*Peganum harmala*) It is a type of plant that contains alkaloids in all its parts (Moloudizargari et al., 2013), and beta - carboline alkaloids derived from particularly harmine shows ability to fight cancer by focusing on apoptosis, autophagy, aberrant cell proliferation, angiogenesis, metastasis, and cytotoxicity (Jalali *et al.*, 2021).

## FLAVONOIDS

They are low molecular weight polyphenolic secondary metabolic compounds, distributed in the plant kingdom, they gather in the cellular vacuoles of plants, and they are responsible for the color and aroma of flowers and fruits. Detoxifying, antimicrobial defense compounds (Samanta *et al.*, 2011), and it's found in re also abundantly found in foods and beverages of plant origin, such as fruits, vegetables, tea, cocoa and wine; hence they are termed as dietary flavonoids (Panche *et al.*, 2016). Onions contain several compounds, most important of them quercetin and its derivatives, a group of flavonoids, which contribute much to the useful bioactive qualities of onions and their related products (Ren *et al.*, 2020). Broccoli (*Brassica oleracea* L. var. *italica*) is a vegetable species that promotes health, flower's who's the primary edible part, which features abundance in secondary metabolites including flavonoids and glucosinolates.

## SAPONOSINS

They are heterosides formed of a water - soluble carbohydrate chain and a triterpene or steroid liposoluble structure. They abound in some plant families like Fabaceae (*Glycyrrhizia glabra*) (Zhang and Ye, 2009), and Caryophyllaceae (*Saponaria officinalis*), the whole plant contains resinous substances, mucilaginous matters, flavonoids and saponins. Saponin - containing plant materials, i. e., *Yucca schidigera*, alfafa, were used as feed additives to increase growth, milk, or wool in ruminant production (Wina *et al.*, 2005).

## VOLATILE OILS

They are variable mixtures of principal terpenoids, and a variety of low molecular weight aliphatic hydrocarbons, acids, alcohols, aldehydes, acyclic esters or lactones, and exceptionally nitrogen - and sulfur - containing compounds, coumarins, and homologs of phenylpropanoids. Terpenes are among the chemicals responsible for the medicinal, culinary, and fragrant uses of aromatic and medicinal plants (Dorman and Deans, 2000). Essential oils are found in all parts of the plant in various plants such as *Cinnamomum verum*, bark, leaves, and flowers, which are used for essential oil production (Narayanankutty *et al.*, 2021); seeds in *Nigella sativa* (Nickavar *et al.*, 2003); loaves in *Salvia officinalis* (Perry et al., 1999); stems in *Caryocar villosum* and in stems, adult leaves, immature flowers, and fruits of *Eucalyptus oleosa* The use of volatile, aromatic oils is not limited to food flavorings, toiletries, and perfumes; they can also be used as insecticides or herbicides. Volatile oils extracted by steam distillation from four plant species—turmeric (*Curcuma longa*), kaffir lime (*Citrus hystrix*), and citronella grass (*Cymbopogon winterianus*), and hairy basil (*Ocimum americanum*), were effects against three *mosquito vectors: Aedes aegypti*, *Anopheles dirus*, and *Culex quinquefasciatus* (Tawatsin *et al.*, 2001).

## FATS AND LIPIDS

Fats and lipids, a large group that includes triglycerides and high fatty acids, these substances are found in plants in the form of fatty droplets, and these substances do not evaporate or volatilize, and they cannot be distilled without decomposition, unlike volatile oils. Scientific studies have shown that saturated fats favorably increase blood HDL - Cholesterol levels without significant changes in the total cholesterol/HDL - Cholesterol ratio. Palmitic acid, the major component of the oil extracted from palm trees, has special structural and functional roles in utero and in infancy to prevent the risk of cardiovascular disease.

## CONCLUSION AND FUTURE PERSPECTIVES

Since ancient times, plants have been resorted to in the treatment of various diseases until the present time, and due to their effectiveness, these medicinal plants are still used to this day in the treatment of some diseases, alleviating the symptoms associated with diseases, or prevention and increasing immunity from exposure to some diseases, as we have noted the circulation of This was among people in the days of the Corona pandemic (Covid - 19) and other diseases, and the use of medicinal plants is considered one of the habits inherited through generations. The Kingdom of Saudi Arabia is characterized by the availability of many types of medicinal plants spread throughout its lands due to its uniqueness in a distinct geography. And because the forms of many medicinal plants are similar, or because the public lacks sufficient information about their benefits and harms, as well as how to use them, it is always recommended to consult specialists in this field to obtain the desired benefit and benefit, and since it has been observed that the world has clearly returned to treatment with natural medicinal plants and interest in alternative medicine, This prompts us to increase interest and research more in this field, to benefit from medicinal plants and natural resources, and to be careful to preserve them so they do not become extinct.

## REFERENCES

- ❖ Aati, H., El - Gamal, A., Shaheen, H., and Kayser, O. (2019). Traditional use of medicinal native plants in the Kingdom of Saudi Arabia. *J. Ethnobiol. and Ethnomed*, 15 : 1 - 9.
- ❖ Al Akeel, M. M., Al Ghamdi, W. M., Al Habib, S., Koshm, M., and Al Otaibi, F. (2018) Herbal medicines: Saudi population knowledge, attitude, and practice at a glance. *J. Family Medicine and Primary Care*. 7: 865.
- ❖ Alamgir, A. N. M. (2018). Secondary metabolites: secondary metabolic products consisting of C and H; C, H, and O; N, S, and P elements; and O/N heterocycles. In; *Therapeutic Use of Medicinal Plants and their Extracts: Volume 2* (pp.165 - 309). Springer, Chem.
- ❖ Aldhebiani, A. Y., and Mufarah, N. (2017). Phytochemical screening of some wild plants from Wadi Yalmlam, Saudi Arabia. *J. Pharm. Biol. Sci*, 12: 25 - 27.
- ❖ Alqethami, A., and Aldhebiani, A. Y. (2021). Medicinal plants used in Jeddah, Saudi Arabia: phytochemical screening. *Saudi J. Biol. Sci*. 28: 805 - 812.
- ❖ Alwhibi, M. S., Soliman, D. A., Alonaizan, A., Marraiki, N. A., El - Zaidy, M., and AlSubeie, M. S. (2020). Green biosynthesis of silver nanoparticle using *Commiphora myrrh* extract and evaluation of their antimicrobial activity and colon cancer cells viability. *Journal of King Saud University - Science*. 32:3372 - 3379.
- ❖ Anderson, R. C., Vodovnik, M., Min, B. R., Pinchak, W. E., Krueger, N. A., Harvey, R. B., and Nisbet, D. J. (2012). Bactericidal effect of hydrolysable and condensed tannin extracts on *Campylobacter jejuni* in vitro. *Folia microbiologica*. 57:253 - 258.
- ❖ Borokini, T. I., and Omotayo, F. O. (2012). Comparative phytochemical analysis of selected medicinal plants in Nigeria. *Inter J Adv Chem Res*, 1:011 - 018.
- ❖ Cox - Georgian, D., Ramadoss, N., Dona, C., and Basu, C. (2019). Therapeutic and medicinal uses of terpenes. In *Medicinal Plants* (pp.333 - 359). Springer, Cham.
- ❖ Dorman, H. D., and Deans, S. G. (2000). Antimicrobial agents from plants: antibacterial activity of plant volatile oils. *J. Appl. Microbiol*. 88: 308 - 316.
- ❖ Ekor, M. (2014). The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety. *Frontiers in pharmacol*. 4: 177
- ❖ Jalali, A., Dabaghian, F., and Zarshenas, M. M. (2021). Alkaloids of *Peganum harmala*: Anticancer biomarkers with promising outcomes. *Current pharmaceutical design*, 27: 185 - 196

- ❖ Kaur, R., and Bhaskar, T. (2020). Potential of castor plant (*Ricinus communis*) for production of biofuels, chemicals, and value - added products. In Waste biorefinery (pp.269 - 310). Elsevier
- ❖ Khan, M. A. (2016). Introduction and importance of medicinal plants and herbs. Unani.
- ❖ Zahid, India.
- ❖ Li, D., Li, L., Ge, Z., Limwachiranon, J., Ban, Z., Yang, D., and Luo, Z. (2017). Effects of hydrogen sulfide on yellowing and energy metabolism in broccoli. *Postharvest Biol. Tech.* 129:136 - 142.
- ❖ Mahomoodally, M. F. (2013). Traditional medicines in Africa: an appraisal of ten potent African medicinal plants. *Evidence - Based Complementary and Alternative Medicine*, 2013.
- ❖ Narayanankutty, A., Kunnath, K., Alfarhan, A., Rajagopal, R., and Ramesh, V. (2021). Chemical composition of *Cinnamomum verum* leaf and flower essential oils and analysis of their antibacterial, insecticidal, and larvicidal properties. *Molecules*. 26: 6303.
- ❖ Nickavar, B., Mojab, F., Javidnia, K., and Amoli, M.A. R. (2003). Chemical composition of the fixed and volatile oils of *Nigella sativa* L. from Iran. *Zeitschrift für Naturforschung C*, 58: 629 – 631
- ❖ Otunola, G. A. (2021). Culinary spices in food and medicine: an overview of *Syzygium aromaticum* (L.) Merr. and LM Perry [Myrtaceae]. *Frontiers in Pharmacology*, 12:120-125.
- ❖ Pan, S. Y., Litscher, G., Gao, S. H., Zhou, S. F., Yu, Z. L., Chen, H. Q., . . . and Ko, K. M. (2014). Historical perspective of traditional indigenous medical practices: the current renaissance and conservation of herbal resources. *Evidence - based complementary and alternative medicine*.
- ❖ Panche, A. N., Diwan, A. D., and Chandra, S. R. (2016). Flavonoids: an overview. *Journal of nutritional science*, 5:21-27.
- ❖ Penso, G. (1980). The role of WHO in the selection and characterization of medicinal plants (vegetable drugs). *J. Ethnopharmacol.* 2: 183 –188
- ❖ Perry, N. B., Anderson, R. E., Brennan, N. J., Douglas, M. H., Heaney, A. J., McGimpsey, J. A., and Smallfield, B. M. (1999). Essential oils from Dalmatian sage (*Salvia officinalis* L.): variations among individuals, plant parts, seasons, and sites. *Journal of Agri. Food chem*, 47: 2048 - 2054.
- ❖ Petrovska, B. B. (2012). Historical review of medicinal plants' usage. *Pharmacognosy reviews*, 6 : 1.
- ❖ Ren, F., Nian, Y., and Perussello, C. A. (2020). Effect of storage, food processing and novel extraction technologies on onions flavonoid content: A review. *Food Res. Inter.* 132: 108953.
- ❖ Roy, A. (2017). A review on the alkaloids an important therapeutic compound from plants. *I.J.P.B.*, 3: 1 - 9.
- ❖ Samanta, A., Das, G., and Das, S. K. (2011). Roles of flavonoids in plants. *Carbon*, 100:12 - 35.
- ❖ Tawatsin, A., Wratten, S. D., Scott, R. R., Thavara, U., and Techadamrongsin, Y. (2001). Repellency of volatile oils from plants against three mosquito vectors. *J. Vector Ecol*, 26: 76 – 82.
- ❖ Ullah, R., Alqahtani, A. S., Noman, O. M., Alqahtani, A. M., Ibenmoussa, S., and Bourhia, M. (2020). A review on ethno - medicinal plants used in traditional medicine in the Kingdom of Saudi Arabia. *Saudi Journal of Biological Sciences*, 27: 2706 - 2718.
- ❖ Wina, E., Muetzel, S., and Becker, K. (2005). The impact of saponins or saponin - containing plant materials on ruminant production A Review. *J. Agri Food Chem.* 53: 8093 – 8105
- ❖ World Health Organization. (2013). WHO traditional medicine strategy: 2014 - 2023. World Health Organization.
- ❖ Zhang, Q., and Ye, M. (2009). Chemical analysis of the Chinese herbal medicine Gan - Cao (licorice). *J. Chrom.* 1216: 1954 - 1969.