

Review Article

Plants and Alternative Medicine in the Middle East.

Aref Abu-Rabia^{1*}

¹Ben-Gurion University of the Negev, Beer-Sheva, 84105, Israel.

***Corresponding Author:** Aref Abu-Rabia, Ben-Gurion University of the Negev, Beer-Sheva, 84105, Israel, Tel: 0544292892; Fax: 08-6472952; E-mail: arefabu@gmail.com

Citation: Aref Abu-Rabia (2023) Plants and Alternative Medicine in the Middle East. *SciEnvironm* 6: 184.

Received: July 03, 2023; **Accepted:** July 18, 2023; **Published:** July 23, 2023.

Copyright: © 2023 Aref Abu-Rabia, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

Anthropologists, and mainly medical anthropologists, among other fields, are interested in studying what we eat, how we eat, and why we eat what we eat. This paper will first examine several plants, analyze their properties and uses in alternative medicinal practices in the twenty-first century, within different communities, and according to their way of life in the Middle East.

Secondly is to identify the wild plants and their uses for food, as well as medicine etc.

The third purpose is to document the ethno-botanic data on herbal remedies that are traditionally used.

Methodology

The paper is based on unstructured interviews, and the observation of participants were carried out in the informant homes. Most of the informants were in the age range of 25 to 80.

This survey involved 40 people, 10 of whom are traditional healers, who were interviewed about food and medicinal plants during the last four years, among different communities in the Middle East.

Keywords: *Plants, Alternative Medicine, Healers, Middle East.*

Introduction

Arabic medicine in the Middle East was influenced by many cultures and civilizations, as a result of commerce and trade as well as political, military, religious, and intellectual influences these influences originated from Greece, Rome and Persia. The Greco-Roman system of medicine developed based primarily on the writing of Hippocrates, Dioscorides, and Galen.

One of the greatest and most well-known Islamic doctors was Ibn Sina (Avicenna, 980–1037), who compiled the Canon of Medicine. Another leading Islamic philosopher/physician was al-Razi (Rhazes, 865-923), who compiled the Comprehensive Book on Medicine. The works of Ibn Sina and Rhazes were later translated into Latin and continued to influence medical practice until as late as the nineteenth century.

The early Islamic hospitals provided patients with systematic treatments based upon humoral medicine. These included exercises, baths, dietary regimens, and a comprehensive materia medica, in addition to bone-setting, cauterizing, venesection, and eye surgery, as well as additional medical practices. The Arab medical tradition, established in the seventh century, was molded in the tenth century, developed in the eleventh and twelfth centuries, and reached its peak in the thirteenth to sixteenth centuries, then later declined in the seventeenth to nineteenth centuries. [1-2]

Medicine of the Prophet

The sayings (hadith) of the Prophet Muhammad on health and illness were systemized and became known as Medicine of the Prophet. Medicine of the Prophet (tib nabawi) is a combination of religious and medical information, providing advice and guidance on the two aims of medicine - the preservation and restoration of health - in careful conformity with the teachings of Islam as enshrined in the Qur'an and the hadith. This includes information on the customs and sayings of the Prophet, as well as on herbal and medical practices. It is a concise summary of how the Prophet's guidance and teaching can be followed, as well as how health, sickness and cures were viewed by Muslims.

The original Arabic text offers an authoritative compendium of Islamic medicine and still enjoys much popularity in the Muslim world. Medicine of the Prophet will appeal not only to those interested in alternative systems of health and medicine, but also to people wishing to acquaint themselves with, or increase their knowledge of, hadith and the religion and culture of Islam [3-5].

Islamic Beliefs

Muslims in different parts of the globe respond to treating maladies by different ways and means. They beseech Allah and seek relief through traditional and modern/western medicine. Such a response takes place as reflected in two well-known and accepted sentiments among Muslims: the first one is the well-known phrase in the Qur'an: Say: "Nothing will happen to us except what Allah has decreed for us: He is our Protector": and on Allah let the Believers put their trust" [6]. There is the Prophet Muhammad's proclamation that "No disease Allah created, but that He created treatment" [7].

Middle East healers: Arab healers in the Middle East use a range of techniques and medications in their work. Illnesses are cured by means of remedies taken from vegetables, minerals, and animals. In traditional and folk medicine, the Arab patient appeal not only to the herbalist, but also to the dervish, the khatib- the amulet writer, the cauterizer; the mujabbir (for setting broken or fractured bones); midwives; holy tombs (of ancestors or prophets); the sea, rivers, and the holy springs. The healers use techniques that stimulate physiological processes, including bathing, sweat-bathing, massage, cupping, emetics, burning/cauterizing, incision, and bloodletting [8-10], as well as psychological treatment, spiritual rituals, charms and amulets [11-15]

Herbalist healers: This traditional medicine is based on a practical knowledge of plants and treatments over centuries of practice. It should be noted that some plants are used similarly throughout the Middle East, while some plants have different uses in different countries in the region. One of the most famous medicines in use among the Arab in the Middle East is the arba'yn, which consists of a mixture of forty different types of plants and is considered to be a cure for all aches and pains; usually it is bought from the 'Attar – a local pharmacologist and vendor of medicinal spices. Various plant parts are used, including flowers, fruits, leaves (fresh or dried), juices, roots, seeds, bulbs, tubers, and pulps [16]. Some of these plants are described below, with their properties and uses:

Hypericum perforatum L: [Fam. Hypericaceae]

Arabic name: 'anas el-nafs, 'irm, hashishat el-qalb,

English: St. John's Wort.

Plant parts: aerial parts, flowers, leaves.

Chemical constituents: Hypericine, pseudo-hypericine, essential oil, tannin, resin, Vitamin C [17-18]. Hypericin, pseudohypericin, hyperforin, flavonoids, procyanidins, essential oil [19]. Adhyperforin, quercetin, hyperoside, campferol, myricetin, amentoflavone [20-22]. Hypericin, hyperforin, pseudohypericin, flavonoids, procyanidins, essential oil (Bone 2007:64) and choline [23].

Properties and Ethno-botanical use:

In Palestine, used as anthelmintic, aphrodisias, treat anxiety, muscle and joint inflammation [24].

In Jordan, it is a sedative, astringent, antispasmodic, stimulant, antiseptic, treats intestine and bile disorders, asthma, gout, rheumatism, wounds, burns and bruises, fatigue and weakness [25].

In Lebanon, it improves blood system circulation, joint intrusion, frigidity, and impotency, digestive system disorder, wounds, burns and piles, ulcer, sunburn, mental disorder and insomnia [26].

In North Africa, the flowering summits are an astringent, cholagogue, emmenagogue and diuretic [27].

In Canary Islands, it is also used for the treatment of several diseases, such as skin lesions, eczema, burns and microbial, inflammatory, and psychological disorders [28].

In Europe, the crude extract of *Hypericum perforatum* is now widely used as a drug for the treatment of depression [29]. The plant has proven photodynamic, antiviral, antiretroviral, and antitumor effects. The extracts of *Hypericum* also make use of this plant in the treatment of Acquired Immune Deficiency Syndrome (AIDS) and cancer treatments [30]. It is used in the treatment of jaundice, liver diseases, gall bladder stones, rheumatoid arthritis, and inflammatory conditions (Al-Asmari et al. 2014: 4). It is an antidepressant, nervine tonic, treats depression, anxiety, emotional stress, neuralgia, sciatica, trigeminal neuralgia and insomnia (Bone 2007: 64). It is vulnerary, and nervine; treats insomnia, nervous conditions, melancholy, colic, burns, wounds, sores and bruises [31].

In Spain, the flowered aerial parts are used as herbal tea or for making liqueur [32] Moreover, these parts are macerated or fried in olive oil, and used externally for injuries, burns and chaps [33].

In India, the whole plant is used as a detergent, diuretic, astringent, emmenagogue, anthelmintic and resolute [34].

In China, it is an anodyne, antiseptic, astringent, nervine, sedative, and a vulnerary; used to treat insomnia, hysteria, nervous depression, neurasthenia, neuralgia, rabies, lungs and urinary passages [35].

In general uses, it is effective in treating depression and viral diseases, as well as improving cognitive functions, soothing and anti-anxiety. The active ingredient responsible for anti-depressant activity is hypericin, which is found in the leaves of the plant [36-37].

Mandragora autumnalis Bertol/ Mandragora officinalis: [Family: Solanaceae]

Arabic: mjininih, yabruh, tuffah al-majanin

English: Mandrake, Satan's apple

Plant parts: ripe fruit, and roots.

Chemical constituents: roots contain alkaloids: scopolamine, hyoscyne and atropine [38]; Mandragorine and other alkaloids (Karim and Al-Qura'an 1986: 43), atropine and scopolamine [39].

Properties and Ethno-botanical use: Natural products: atropine and scopolamine continue to hold an important role in medicine, especially in the Near East and the Arab World, as an aphrodisiac and analgesic, or the use for spasms of the gastrointestinal tract (Guillermo Benítez 2013: 1-23).

Arabs eat the ripe fruit twice a week to treat urinary infections; to gain weight; infertility, vaginal infections, increasing breast milk, evil eye; diseases of genital organs.

In North Africa, the fumigated dry leaves possess chemical agents against diseases of genital organs by local application (Boulos 1983: 167).

In Jordan, it is a narcotic, sedative, carminative, against cough, bronchitis, throat pain, and genital organ diseases [40]; the roots are a strong emetic and purgative analgesic (Karim and Al-Qura'an 1986: 66). It is an ointment for external use [41].

In Palestine, eating ripe fruit is considered to increase male sexual passions and to increase fertility in women ([42]. Among, the Arab-Bedouin of the Negev, Sinai and Palestine Fellahin, they eat the ripe fruit for enhancing potency, and to treat women infertility.

In ancient Egypt, the roots are used as an aphrodisiac, and love potions. The fruit has a symbolic erotic significance in pharaonic times [43].

In Lebanon, it is used as an adjuvant; it treats palsy and demon possession-schizophrenia [44].

The leaves, unripe seeds, and fruit of mandrake are poisonous. In cases of accidental ingestion, vomiting is induced, milk or olive oil is administered orally, and rest is recommended. The Bedouin of Southern Sinai [45] give the patient sweet tea to drink, while those of the Negev [46] make the patient gargle with tea made from *Matricaria aurea* (babunaj[47]; induce vomiting with a tablespoon of salt in lukewarm water; or administer a laxative to induce diarrhea; in order to cleanse the stomach and bowels of the remnants of the poisoned food.

Origanum majorana L. [Family: Labiatae (Lamiaceae)]

Arabic: mardaddoush, rayhan dawoud

English: sweet marjoram, knotted marjoram

Plant parts: leaves and flowers.

Chemical constituents: ethanolic essential oil, linalool, and terpinen [48-50].

Properties and ethno-botanical use: used as an aphrodisiac, tonic, emmenagogue, hemorrhoid treatment, carminative, diuretic, and stimulant (Boulos 1983: 109; Hammad and Rajai 1990: 200). It is also used in the treatment of kidney

stones, genitourinary tract infections, skin diseases, prostate, tumors and cancer as well as to strengthen the body and act as an appetizer [51-52]. Among the Arabs, marjoram with olive oil is a favorite condiment (Abu-Rabia 2005: 406). Marjoram has been found to have potential anti-cancer (breast, colon, lung, pancreas, prostate) effects [53-54]. A comparative study between Arabs and Jews in Israel reveals that the striking differences in cancer prevalence are the result of different dietary patterns, which may include nutritional factors (like marjoram and olive oil) that serve as cancer-inducing or cancer-protective mechanisms. Steam-distilled volatile oil from marjoram has been evaluated for its antibacterial and antifungal activities [55].

In Lebanon, pellets of crushed fresh leaves are packed into the rectum for hemorrhoids, and suppositories are sometimes made of dried powdered leaves with tragacanth [56] or other gums and resins; treats migraine, epilepsy, insomnia, rheumatism, ascites, neck pain and intrusion (Philips 1958: 262-263; Khalifa 1998: 567-569).

In Palestine, it is a menstruation regulator, treats migraine and nervous system [57], and cancer (Ali-Shtayeh, Jamous and Jamous 2011: 238); digestive, anticoagulant, mouthwash; for the treatment of respiratory disorders, migraines; for the control of menstruation; and for the nervous system [58]. It is an emmenagogue, diuretic, anti-decay, anti-poison, catarrh, treats insomnia, dysmenorrhea, anuria, an appetizer, treats liver, renal and gastric problems, and scorpion sting (Saganuwan 2010: 780).

In Saudi Arabia, it is analgesic, treats headaches, asthma, cough, and rheumatism [59].

Portulaca oleracea: [Family: Portulacaceae]

Arabic: farfahina, rijleh, baqla

English: Purslane

Plant parts: fresh leaves and stalks, young shoots.

Chemical constituents: Mucilage, potassium oxalate, minerals (Karim and Al-Qura'an 1986: 44); Calcium, phosphorus and iron (Lust 1981:501-506); leaves contain beta-cystosterol, alpha-linolenic acid (Palevitch and Yaniv 2000:221); the plant is rich in calcium, iron, and potassium salts; contains oxalic acids, malic and citric acids; alkaloids, coumarins, flavonoids, cardiac and anthraquinone glycosides; and mucilage [60]; alkaloids, beta-carotene, beta-sitosterol, caffeic acid, catechol, chlorophyll, coumarins, ferulic acid, flavonoids, saponins, and tannin [61]. Flavonols (apigenin, kaempferol, luteolin, quercetin, isorhamnetin) [62].

Properties and Ethno-botanical use: Crush, soak in water and drink; eat as raw salad, or cooked to treat burns; diuretic, urinary tract infections and retention, cystitis. Crush the leaves and the stalks, to be soaked in water and drink two cups a day in the morning and evening, to treat urinary infections and retention. Eat some leaves as a raw salad; to treat urinary tract disease or stones. The plant is used as a vegetable; used for maturing abscesses. The whole plant is emollient, calmate, refreshing agent and vermifuge, for constipation, bleeding, spleen problems, digestive system inflammations, gum inflammations, fever, stomach ulcer, piles, warts, and skin diseases (Karim and Al-Qura'an 1986: 67; Khalifa 1998: 129-130; Qubaysi 1998: 336), for urinary inflammations and treating burns [63].

Treats inflamed breasts, hemorrhoids, and also an aphrodisiac. The plant is used as a vegetable, nutritive, raw salad, or cooked. In folk medicine, the cataplasm of fresh leaves is used for maturing abscesses [64]; an aphrodisiac and diuretic [65].

In Jordan, leaves and young shoots used as raw, green salad, sautéed with oil [66].

In Palestine, the sap is squeezed from the pounded leaves and stems, to drink for treatment of urinary tract disease, and skin diseases (Krispil 2000: 220); treats cancer (Ali-Shtayeh, Jamous and Jamous 2011: 238), kidney stones and sun stroke (Said et al. 2002: 260), an antiseptic, and diuretic in urinary disorders, a febrifuge, and in the treatment of dysentery, carbuncles, snake bite and against sores (El-Seedi 2013: 752). Treats headache, urinary bladder pain, vermifuge, ulcer, hemostatic, suppresses bile, ophthalmic, fevers, hemorrhoids, and diarrhea (Saganuwan 2010: 777). Treats gonorrhea, allergies, and uterus contractions; and has anti-cancer activities (breast, colon, stomach, liver and skin) (Esiyok et al 2004: 336). The seeds are used to treat hepatocellular carcinoma [67], nipple and mouth ulcers [68]. Also, for liver disorders, gastrointestinal problems and inflammatory disorders (Al-Asmari et al. 2014: 5).

In the United Arab Emirates, cultivated *Portulaca oleracea* var. *sativa* is used as a salad [69]. In Italy, the richest extracts could be used in various fields such as the food (consumed salad plant) and nutraceutical industries. In addition, due to its high content of nutrients, especially antioxidants, purslane is also a very likely candidate as a useful cosmetic ingredient (Sicari et al., 2018: 39-46).

***Sisymbrium irio* L.** [Family: Cruciferae]

Arabic: kibs, fiji el-jamal, hwirah, harrah

English: London rocket

Plant parts: leaves and flowers

Chemical constituents: essential oils: Palmitic acid, n-Heptadecanol, Menthol, 2-Hexyl-1-decanol, Hexatriacontane, Pentacosane, Oxirane, dodecyl, 2-Hexyl-1-decanol, Nonadecano, Oxirane, tetradecyl [70]; Volatile compounds in particular nitriles and isothiocyanates from the aerial parts (Al-Qudah and Abu Zarga 2010: 6-10).

Properties and Ethno-botanical use: to treat continuous pains during menstruation, bleeding, infection of urinary tract, and internal bleeding. Eat the leaves and flowers twice a day for three weeks, to treat urinary tract infections and retention; sore throat, and cold.

In Palestine, the soaked leaves in water are drunk, to treat continuous pains during menstruation, bleeding, infection of urinary tract, and internal bleeding (Krispil 2000: 245-246); it is edible and used as antidiabetic [71].

In Negev and Sinai, the boiled seeds are used as an expectorant and as a febrifuge (El-Seedi 2013: 751). The Bedouin in the Negev and Sinai eat the stems, flowers and leaves as a fresh food; and use the dried leaves as a tobacco substitute [72].

In Syria/Lebanon/North Arabia, the nomadic pastoral Ruwalla also eat it [73-74].

In Egypt, *Sisymbrium irio* has several biological activities including treatment of coughs and chest congestion, to relieve rheumatism, to detoxify the liver and the spleen, and to reduce swelling and clean wounds. It has analgesic, antipyretic and antimicrobial activity [75].

In Jordan, the plant is a rich source of flavonoids and glucosinolates. It has a sharp flavor and can be used in salads. The plant is used in folk medicine as a febrifuge, a stimulating poultice, treating asthma and for infections of the throat and chest [76].

Results

Throughout the survey, information about several food and medicinal plants used by different Arab communities was recorded and analyzed. This information included names of plants and parts used, which were obtained from 40 people, 10 of whom were healers. This survey is the first research work which collected information about food and medicinal plants, and specifically in the Middle East.

Conclusion

Adults and senior people have a wide range of herbs used for their diseases as well as for food and diet.

The paper shows that people use various parts of the plants in a host of manners as both food and medicine. These plants parts are used fresh and soft, or cooked or dried. Furthermore, these plants may be picked in the wild or bought in specialty shops as well as from herbalists ('attarin). The dosages for patients with the same diseases or disorders may vary, according to the ages and the structures of the patients' bodies.

The rich variety of approaches employed by different healers to treat or prevent diseases is indicative of the depth and breadth of indigenous medicine practiced among the Arab in the twentieth and twenty first centuries.

It should be noted that wild desert plants also contain a host of other biologically active compounds besides nutrients. The physiological effects of these other compounds in relation to plant nutrients are not well known but could affect nutrient and medical utilization or other functions. These topics are of relevance for future research in terms of improving our understanding of human nutritional and medical requirements of the people in the Middle East.

References

1. Hamarneh S (1991) Ibn al-Quff's contribution to Arab-Islamic medical sciences. *Hamdard Med* 34: 27-36.
2. Lev Efraim (2002) "Reconstructed Materia Medica of the Medieval and Ottoman al-Sham." *Journal of Ethnopharmacology* 80: 167-79.
3. Johnstone Penelope (1998) Ibn Qayyim al-Jawziyya, Medicine of the Prophet. Translated and edited by Penelope Johnstone. Cambridge: Islamic Texts Society.
4. Mursi Amin (1966) Dirasatt fi'l-Shi'ūn al-tibbiyah al-'arabiyah (Studies on Arab Medical Affairs). al-Iskandariya: al-ma'arif. (In Arabic.)
5. Ghaly Mohammed (2016) "Prophetic Medicine", in Muhammad in History, Thoughts, and Culture: An Encyclopedia of the Prophet of God; Academia.edu, 251 Kearny Street, #520, San Francisco, CA 94108.
6. The Holy Quran 9:51
7. Al-Bukhari (1974) Sahih al-Bukhari. Arabic-English, vol. 7, edited by Muhammad Muhsin Khan. al-Medina al-Munawwara: Islamic University.
8. Abu-Rabia (2020) Indigenous Medicine among the Bedouin in the Middle East, New York and Oxford: Berghahn books.
9. Canaan Tewfik (1920–1921) "Haunted Springs and Water Demons in Palestine." *Journal of the Palestine Oriental Society* 1: 153–170.
10. Pinczuk Shira (1994) "Pregnancy and Delivery among the Negev Traditional Society." Paper submitted to the Environmental High School at Sde Boqer.

11. Khalifa N, Hardie T, Latif S, Jamil I, Walker D et al. (2011), Beliefs about Jinn, black magic and the evil eye among Muslims: age, gender and first language influences. *International Journal of Culture and Mental Health* 4: 68-77.
12. Norah Al-Rowais et al. (2010) Traditional Healers in Riyadh Region: Reasons and Health Problems for Seeking Their Advice. A Household Survey, *The Journal of Alternative and Complementary Medicine* 16: 199-204.
13. Gorkin M, Othman R (1994) Traditional Psychotherapeutic Healing and Healers in the Palestinian Community. *Israel Journal of Psychiatry* 31: 221-231.
14. Popper-Giveon A (2012) A Tale of an Amulet: Traditional Arab Women Healers in Israel. *Haifa University Press* 15-21.
15. Massalha K, Baron B, (1994) Souls in Narrow Lanes: Popular Healers among Israeli Arabs. The Institute for Israeli Arab Studies, Beit-Berl 10-23.
16. Abu-Rabia, Aref (2014) Ethnobotany Among Bedouin Tribes in the Middle East, in Medicinal and Aromatic Plants of the Middle East, edited by Zohara Yaniv-Bachrach and Nativ Dudai, Dordrecht Heidelberg New York and London: *Springer* 27-36.
17. Khalifa A (1998) "al-Nabatat: Saydaliyat al-Taby'ah," al-Markaz al-Thaqafi al-'Arabi (in Arabic), Bayrut.
18. Qubaysi H (1998) "Mu'jam al-a'shab wal-nabatat al-tibbiya," Dar al-Kotob al-Ilmiyah-Publishing Haouse, Bayrut,
19. Bone Kerry (2007) The Ultimate herbal Compendium, A desktop guide for herbal prescribers, Warwick, Queensland: Phytotherapy Press.
20. Al-Asmari, Abdulrahman et al. (2014) A Review of Hepatoprotective Plants Used in Saudi Traditional Medicine. *Evidence-Based Complementary and Alternative Medicine* 1-22.
21. I Roman, M Cristescu, C Puica (2011) "Effects of Hypericum perforatum and Hypericum maculatum extracts administration on some morphological and biochemical parameters in rat liver intoxicated with alcohol," *Studia Universitatis "Vasile Goldis", Seria Stiint, ele Viet, ii* 21: 361-370.
22. Y Ozturk, S Aydin, K H C Baser, N Kirimer, N. Kurtar-Ozturk et al. (1992) "Hepatoprotective activity of Hypericum perforatum L. alcoholic extract in rodents," *Phytotherapy Research* 6: 44-46.
23. Gruenwald J, Brender T, Jaenicke C (Eds.) (2007) PDR for Herbal Medicines 4th ed. Thomson Healthcare Inc. Montvale NJ; Weiss, R F, 2001, Weiss's herbal medicine Thieme.
24. Jaradat (2005) Medical Plants Utilized in Palestinian Folk Medicine for Treatment of Diabetes Mellitus and Cardiac diseases. *Journal Al-Aqsa University* 9: 1-28
25. Karim FS, Al-Qura'an S (1986) Medicinal plants of Jordan. Yarmouk University, Irbid, pp 39-46, 66-68
26. Ahmed and Nasreen Houry (2017) Lebanon wildflowers Illustrated Guide.
27. Boulos L (1983) Medicinal Plants of North Africa, Reference Publications, Algonac.
28. Sanchez-Mateo CC, Prado B, Rabanal RM (2002) Antidepressant effects of the methanol extract of several Hypericum species from the Canary Islands. *Journal of Ethnopharmacology* 79: 119-127.

29. Cirak (2014) Differential Phenolic Accumulation in Two Hypericum Species in Response to Inoculation with *Diploceras hypericinum* and *Pseudomonas putida*. *Plant Protect. Sci* 50: 119–128.
30. Guedes RC, Eriksson LA (2005) Theoretical study of hypericin. *Journal of Photochemistry and PhotobiologyA: Chemistry* 172: 293–299.
31. Lust,J, (1980) *The Herb Book*, Bantam Books, Toronto and New York.
32. Tardío J, Pardo-de-Santayana M, Morales R (2006) Ethnobotanical review of wild edible plants in Spain. *Bot J Linn Soc* 152: 27–72.
33. González Jose et al (2010) Ethnobotanical study of medicinal plants traditionally used in the Arribes del Duero, western Spain. *Journal of Ethnopharmacology* 131: 343–355.
34. Jain and DeFilipps (1991) Algonac, Michigan: Reference Publication Inc. *Medicinal Plants of India I*.
35. Duke, James, Edward Ayensu (1985) *Medicinal Plants of China*, Algonac, Michigan: Reference Publication Inc.
36. Kumar V, Khanna VK, et al. (2002) Brain neurotransmitter receptor binding and nootropic studies on Indian *Hypericum perforatum* Linn. *Phytother Res* 16: 210-216.
37. Dinamarca MC, CerpaW, Garrido J, Hancke JL, et al. (2006) Hyperforin prevents beta-amyloid neurotoxicity and special memory impairments by disaggregation of Alzheimer’s amyloid-beta-deposits. *Mol. Psychiatry* 11: 1032-1048.
38. Palevitch D, Yaniv Z (2000) *Medicinal plants of the holy land*. Modan Publishing House, Tel-Aviv,
39. Guillermo Benítez et al. (2013) The rise and fall of mandrake in medicine. *Journal of Ethnopharmacology* 303: 1-23.
40. Aburjai T, M Hudaib, R Tayyem, M Yousef, M Qishawi, et al. (2007) Ethnopharmacological survey of medicinal herbs in Jordan, the Ajloun Heights region. *Journal of Ethnopharmacology* 110: 294–304.
41. Al-Qura’an S (2009) Ethnopharmacological survey of wild medicinal plants in Showbak, Jordan, *Journal of Ethnopharmacology* 123: 45-50.
42. Krispil N (2000) *Medicinal Plants in Israel and throughout the World: The Complete Guide*. Hed Arzi Publishing House, Or Yehuda, 226, 239.
43. Manniche Lise (1989) *An Ancient Egyptian Herbal*, London: British Museum Publication.
44. Philips Jane (1958) *Lebanese Folk Cures*. Ann Arbor, MI: University Microfilms.
45. Levi Shabtai (1978) *refu’ah, higyenah ve-beri’ut etsel ha-Bedvim be-drum Sinai. Bayt sefer sadeh, marumi sinai*.
46. Dafni, Irit, Amots Dafni (1975) “Some Aspects on Uses of Medicinal Plants among the Bedouin.” *Teva’ ve-ha-arets* 17: 233–240.
47. Abu-Khusa, Ahmad (1976) *Bir al-Saba’ wal-ħaiah al-Badawiya. ‘Amman: matabi’ al- mu’assasah al-ħahafiyah al-urduniyah*. Volume I.
48. Malika Charai, Mahjouba Mosaddak, M Faid (1996):657-664 Chemical Composition and Antimicrobial Activities of Two Aromatic Plants: *Origanum majorana* L. and *O. compactum* Benth. *Journal of Essential Oil Research* 8: 657-664.

49. Vági E, B Simándi, Á Suhajda, É Héthelyi (2005):51-57, Essential oil composition and antimicrobial activity of *Origanum majorana* L. extracts obtained with ethyl alcohol and supercritical carbon dioxide, *Food Research International* 38: 51–57.
50. Saganuwan Alhaji (2010) Some medicinal plants of Arabian Peninsula, *Journal of Medicinal Plants Research* 4: 766-788.
51. Abu-Rabia, Aref (2005) Herbs as a Food and Medicine Source in Palestine, *Asian Pacific Journal of Cancer Prevention* 6: 404–407.
52. Ali-Shtayeh MS, Jamous RM, Jamous RM (2011) Herbal preparation use by patients suffering from cancer in Palestine. *Complement Ther Clin Pract* 17: 235-240.
53. Dursun Esiyok; Semih Otles, Eren Akcicek (2004) Herbs as a Food Source in Turkey. *Asian Pacific Journal of Cancer Prevention* 5: 334-339.
54. Bitterman W, H Farhadian, C Abu-Samra, et al. (1991) “Environmental and Nutritional Factors Significantly Associated with Cancer of the Urinary Tract among Different Ethnic Groups.” *Urol Clin North America* 18: 501-508.
55. Deans, Katerina P Svoboda (2006) The antimicrobial properties of marjoram (*Origanum majorana* L. Volatile Oil. *Flavour and Fragrance Journal*: 187-190.
56. Tragacanth (*Astragalus gummifera*-qatad, kathira’ bayda’) is a shrub that grows in the Middle East. The sap/resin of the bark is used to make medicine-contains chemicals that stimulate the bowel.
57. Said O, Khalil K, Fulder S, Azaizeh H (2002) Ethnopharmacological survey of medicinal herbs in Israel, the Golan Heights and the West Bank region. *Journal of Ethnopharmacology* 83: 251–265.
58. El-Seedi HR, Burman R, Mansour A, Turki Z, Boulos L, et al. (2013) The traditional medical uses and cytotoxic activities of sixty-one Egyptian plants: discovery of an active cardiac glycoside from *Urginea maritima*. *J. Ethnopharmacol* 145: 746-757.
59. Taieb Tounekti, Mosbah Mahdhi, Habib Khemira (2019) Ethnobotanical Study of Indigenous Medicinal Plants of Jazan Region, Saudi Arabia, *Evidence-Based Complementary and Alternative Medicine*. Article ID 3190670.
60. Abbas JA, El-Oqlah AA, Mahasneh AM (1992) Herbal plants in the traditional medicine of Bahrain. *Econ Bot* 46: 158–163.
61. Dursun Esiyok, Semih Otles, Eren Akcicek (2004) Herbs as a Food Source in Turkey. *Asian Pacific Journal of Cancer Prevention* 5: 334-339.
62. Sicari et al. (2018) *Portulaca oleracea* L. (Purslane) extracts display antioxidant and hypoglycaemic effects. *Journal of Applied Botany and Food Quality* 91: 39-46.
63. Al-Qura’an, Saleh (2008) Taxonomical and Pharmacological Survey of Therapeutic Plants in Jordan. *Journal of Natural Products* 1:10-26.
64. Boulos Loutfy, Nabil el-Hadidi (1984) *The Weed Flora of Egypt*, Cairo: The American University in Cairo Press.

65. Akhmisse Mustapha (1985) 130, *Medecine, Magie et Sorcellerie au Maroc ou L'Art traditionnel de guerir*. Casablanca: Benimed.
66. Tukan SK, Takruri HR., DM Al-Eisawi (1998) The use of wild edible plants in the Jordanian diet. *International Journal of Food Sciences and Nutrition* 49: 225-235.
67. Ateya, Abdel-Monem, Maged Abou-Hashem, Zeinab El-Sayed, Fawkia Abbas, et al. (2014) Biological activity of the Egyptian medicinal plants: Part 4 cytotoxicity of 50 Egyptian plants and spices against hepatocellular carcinoma. *American journal of Ethnomedicine* 1: 056-063.
68. Badhib, 'Ali Salem (1991), *al-nabatat al-tibiyya fi al-yaman*, Sana'a: maktabat al-irshad.
69. Western AR (1989) *The Flora of the United Arab Emirates: An Introduction*. A publication of the United Arab Emirates University.
70. Al-Mazroa SA, et.al. (2015) Essential oil of some seasonal flowering plants grown in Saudi Arabia. *Arabian Journal of Chemistry* 8: 212-217.
71. Mohammed Hawash, Nidal Jaradat, et al. (2019) Evaluation of the hypoglycemic effect of seven wild folkloric edible plants from Palestine (Antidiabetic effect of seven plants from Palestine). *Journal of Complementary and Integrative Medicine* 20190032
72. Bailey, Clinton, Avinoam Danin. (1981). "Bedouin Plant Utilization in Sinai and the Negev." *Economic Botany* 35: 145–162.
73. Musil Alois (1928) *The Manners and Customs of the Rwala Bedouins*. New York: American Geographical Society.
74. James Mandaville (2011) *Bedouin Ethnobotany: Plant concepts and uses in a desert pastoral world*, Tucson: The University of Arizona Press.
75. El-Sherbiny et al. (2017) 1-13, Antimicrobial Activities and Cytotoxicity of *Sisymbrium irio* L Extract against Multi-Drug Resistant Bacteria (MDRB) and *Candida albicans*. *International Journal of Current Microbiology and Applied Sciences* 6: 1-13.
76. Al-Qudah, Mahmoud and Abu Zarga, Musa (2010) Chemical Composition of Essential Oils from Aerial Parts of *Sisymbrium Irio* from Jordan. *E-Journal of Chemistry* 7: 6-10.