Kirkuk University Journal for Agricultural Sciences
ISSN:2958-6585
https://kujas.uokirkuk.edu.iq

REVIEW ARTICLE https://doi.org. 10.58928/ku24.15320

Tarragon (*Artemisia dracunculus* L.) biological medicinal, nutritional and economic plant. (review article).

Zaid Khaleel kadhim Ola Hamzah ahmood Asmaa Ali ailawi Hanan Adil Hasan
Department of Horticulture and landscape, College of Agriculture, University of Kerbala, IRAQ.
*Corresponding Author: zaid.alnjim@uokerbala.edu.iq.

Received:26/03/2024 Revised: 28/06/2024 Accepted:15/07/2024 Published: 01/09/2024

ABSTRACT

This review aimed to identify, shed light on, from a chemical and medicinal perspective and identify its secondary metabolites, tarragon (*Artemisia dracunculus*), a culinary herb used as a food supplement and in many dishes, and also medicinally. Essential oils, coumarins, flavonoids, phenolic carbonic acids, and various mineral and vitamin combinations are among its physiologically active secondary metabolites. It is known to possess antimicrobial activity against a wide range of bacterial species, including Staphylococcus aureus, Shigella, Listeria monocytogenes, Pseudomonas aeruginosa, Staphylococcus epidermidis, Bacillus subtilis, and Escherichia coli (RSHI, ATCC 25922). It has bactericidal activity against Helicobacter pylori and treats digestive problems, poor appetite, water retention, and toothache. Its therapeutic digestive actions include appetite stimulation, spasm relief, and laxative properties. It also has diuretic and choleretic properties. It is used as an antioxidant due to its chemical content that protects cells from free radicals.

***Keywords*:** Tarragon, Tarragon nutritional plant, medicinal plants, Asteraceae, antioxidant properties.

Copyright © 2024. This is an open-access article distributed under the Creative Commons Attribution License.

INTRODUCTION

Secondary metabolites are compounds stored in cell tissues that are inactive and are used when the plant is exposed to environmental stresses. Alkaloids, polyacetylenes, glycosides, flavonoids, and flavonols are among the precursors present in plant tissues. Due to these substances' deadly and inhibiting effects on pathogenic microbes, they have recently drawn attention [1]. Plants have been used in medicine since antiquity and are still used today [2]. Initially, trial and error were employed to heal ailments or enhance well-being, allowing helpful plants with positive effects to be isolated [3]. The usage of these plants has been increasingly refined over generations, and it is now referred to as traditional medicine in various contexts. Based on the theories, beliefs, and experiences of different cultures, whether explicable or not, traditional medicine is "the body of knowledge, skills, and practices used to maintain health," according to the World Health Organization. and in the management of physical and mental health disorders, including their prevention, diagnosis, and treatment. [4].

The tarragon plant is an important plant used in Europe, particularly in French cuisine, because it is a member of the Fine Herbs group, a group of vital herbs used for food. The tarragon is an unusual horticultural crop that can be cultivated and produced in the Arab Republic of Egypt for export or local use. The French tarragon and the Russian tarragon are two varieties of perennial herbaceous plants in the Asteraceae family ؛they are herbaceous perennials from the genus Artemisia. Its official name is Artemisia dracunculus, which translates from Latin as “dragon’s wormwood.” It was obtained from the similarity of the thin leaves with the forked tongue of the mythical animal. In common parlance, tarragon is also called dragon grass, dragoon grass, and Fafnir grass. The plant has a spicy aroma with hints of anise, so it is used in dishes to give food a pleasant aroma and piquant taste. For this property, French chefs call tarragon the “king of spices,” and Georgian chefs call it the “queen of greens.” [5]. Research on the pharmacology and phytochemistry of different species within the genus Artemisia L (Asteraceae) has garnered significant attention in recent years. [6,7,8]. The discovery of artemisinin, a sesquiterpenoid lactone, in Artemisia annua (artemisia), and evidence of its efficacy in treating malaria led to the awarding of the 2015 Nobel Prize in Physiology or Medicine, which is certainly the reason for this interest [9,10]. A. dracunculus, a species indigenous to Siberia and Mongolia, is one of the subjects under study. This plant is widely used as a herb in Europe, and it has a long history of usage in traditional medicine in Asian nations such as Iran, Pakistan, Azerbaijan, and India. It was used as an analgesic, hypnotic, and antiepileptic in addition to treating gastrointestinal disorders. It is advised as a successful remedy for fevers, helminth infections, and inflammation [11,12].

Botanical description

A wild plant that is considered an aromatic vegetable. Plant stems are not numerous, and their height ranges from 40 to 150 cm. The stems are bare, erect, and yellow-brown in colour. The entire leaf of the plant is bright green with an anise-like flavour; it tastes like liquorice and is oblong or linear-lanceolate with a pointed apex. The upper part of the lower-tier leaves is slightly grooved. The arrangement of the leaves is alternating. The middle and upper leaves are lanceolate, whereas the

apex of the lower leaves is triangular. The leaf blade has full edges and a sharp point. The flowers have a pale yellow colour. They are arranged in narrow, thickened panicles wrapped in shortened oval or globose leaves. The shell is exposed, painted yellowish-green, shiny with membranes along the edges. The fruit is an oblong achene, without a tuft. Blooms in August-September.The fruits ripen in October.

Tarragon's habitat and environmental requirements

The plant was brought to Europe in general and to France in particular by the Arabs, who had known about the medicinal properties of tarragon since the 35th century AD. The plant grows naturally throughout Eastern Europe, the Caucasus, well central Asia Central Asia, central Asia, China, India, Mongolia, and Pakistan. Tarragon's North American regions range from Alaska and Canada's subarctic regions to Mexico's central regions. Russia's European territory, and the southern portions of Eastern Siberia, Western Siberia, and the Far East, are home to the culture. [13] indicated that the herb French tarragon has a wide distribution, extending across western North America, eastern Europe, and most temperate regions of Asia. Two varieties of tarragon are usually grown in cultivation: Russian and French. Regarding winter hardiness and unpretentiousness, it is better to prefer Russian tarragon, but French is more aromatic [14].

Tarragon grows on dry and saline meadows, in steppes, and sometimes in fields. It appears as a weed on dry steppe slopes and pebbles. It is cultivated almost everywhere, is quite unpretentious, and can grow in both sunny and dark places. It is widely cultivated in many countries as a spicy and aromatic plant.

Planting time: Tarragon is planted during September and October. Planting is done by dividing the roots and all types of cuttings.

Place of agriculture. This plant loves irrigation, but does not tolerate stagnant water, so it must be planted on a flat area, or even better, slightly elevated. In lowlands, where moisture accumulates in the spring and after rains, it will not grow. It is drought-tolerant, just like most perennials with silvery-grey foliage (i.e., the foliage is covered in silvery hairs that can prevent evaporation), and has no specific water requirements.

The soil. prefers loose, fertile soil with plenty of organic matter. It should be rich in lime—tarragon grows poorly in acidic areas. Crops grown on damp, sandy-clay soils with an alkaline reaction provide the maximum yields.

Fertilisation: An acre needs 450 kg of nitrogen fertiliser, which is added in successive batches, starting with the first one month after planting (100 kg), then the second batch a month after the first (150 kg). Then 50 kg of potassium sulphate is added to the dunum, and 100 kg of nitrogen sulphate is added after each mowing. Add fertiliser. Decomposed organic (fresh is not possible - it worsens the taste of greens) or compost - 2 - 3 kg per 1 m². m, as well as ash. The area is then excavated.

Light. Tarragon is a light-loving plant, achieving maximum benefits and aroma when there is a lot of sun. It also grows in partial shade, but becomes less fragrant and its taste is not as pronounced.

Temperature. Tarragon is grown in moderate temperatures, so the temperature should range between (18-20) degrees. This is a cold-resistant plant, and its greenery grows in early spring, as soon as the upper layer of soil thaws. Tarragon is not afraid of frost and winters well. In summer, the most comfortable temperature is around 20°C.

Chemical content of tarragon

Tarragon is abundant in vitamins, including beta-carotene, a precursor to vitamin A, as well as potassium and other minerals. This herb is an essential part of any diet since it contains vital nutrients and minerals, including protein, fatty acids (omega-3 and omega-6), niacin, riboflavin, and others [15]. Tarragon is low in calories and carbs and contains nutrients that may benefit your health, which is due to its chemical content (tab 1). The plant contains essential oil, vitamin C, provitamin A, coumarins - scoparone, scopoletin, resins, and alkaloids. Flavonoids have also been identified [16]. The essential oil consists mainly of octatriene, α-pinene, methoxypropenyl benzene, limonene, extragol, (E)-β-osimene, βpinene and (Z)-β ocimene [17].

Tablet (1) Nutritional value per 100 grams of dried tarragon plant (Artemisia dracunculus). (Source: Arabhosseini and colleagues, 2009; USDA National Nutrient Data Base)

NO.	Principle	Nutrient Value	Percent of RDA	NO.	Principle	Nutrient Value	Percent of RDA
1	Energy	295 Kcal	15%		Minerals		
2	CHO	50.22 g	38%	16	Ca	1139 mg	114%
3	Protein	22.77 g	40%	17	Cu	0.677 mg	75%
4	Total Fat	7.24 g	24%	18	Fe	32.30 mg	403%
5	Cholesterol	0 mg	0%	19	Mg	347 mg	87%

6	Dietary Fiber	7.4 g	19%	20	Mn	7.967 mg	346%
	Vitamins			21	Zn	3.90 mg	35%
7	V. B9	274 µg	68.5%				
8	V. B3	8.950 mg	56%				
9	V. B6	2.410 mg	185%				
10	V. B2	1.339 mg	103%				
11	V. B1	0.251 mg	21%				
12	V. A	4200 IU	140%				
13	V. C	50.0 mg	83%				
	Electrolytes						
14	Na	62 mg	4%				
15	K	3020 mg	64%				

Nutritional value of tarragon

The upper The aerial part of the plant contains coumarins, alkaloids, flavonoids, carotene, ascorbic acid, and essential oils, giving tarragon a pungent taste and spicy aroma. Essential oil contains mercen, sabinene, resins, aldehydes, ocimene, phellandrene, methyl chavicol. Alkaloids are also found in tarragon roots [18]. Common uses for tarragon include pickles, rice and seafood dishes, meats, and sauces. Because of its preservation qualities, it's actively used in pickling cucumbers and cabbage, pumpkin, and making herbal vinegar and tarragon mustard. It enhances flavour of food, thus flavour of food flavour. Thus, it's advised for salt-free people [19].

It's also used in infusions, snacks, and alcoholic and non-alcoholic beverages like tarragon, a carbonated soft drink made with fresh A. Dracunculus leaves. You can offer fresh tarragon leaves as an accompaniment or use them to dress up meat and vegetable dishes. [11]. Dried leaves and flowering tops are used in cooking, especially in fish, chicken, stews, omelettes, sauces, cheeses, vegetables, tomatoes, and pickles, to impart acidity and piquancy to recipes. Fresh tarragon leaves are used in salads, and vinegar steeped in fresh tarragon is a unique condiment. Tarragon is a prominent element in seasoning blends, such as fines herbes [20].

Medicinal importance of tarragon

According to a recent study, tarragon appears to be an important plant with potential medical and cosmetic benefits; in addition to being a useful spice plant, tarragon’s therapeutic value stems from its main classes of secondary bioactive metabolites, which include coumarins, flavonoids, and phenolic acids [21]. Tarragon tincture is recommended for arthritis, cystitis, rheumatism, and increased fatigue. It is, and gastrointestinal diseases and externally for burns and scabies, and as a mouth rinse for inflammatory processes. Tarragon appetite, sleep,and the activity of the sex and other endocrine glands, strengthens the walls of blood vessels, and has anthelmintic and mild diuretic properties. Tarragon contains an essential oil that is rich in sabinene, resins, myrcene, ocimene, phellandrene, sesquiterpene fractions, p-metahydroxycinnamaldehydes and methyl chavicone (chlorinator). It contains vitamins: groups B, A, C, PP, macro- and microelements: potassium, calcium, magnesium, iron, iodine, phosphorus and sodium [22].

Tarragon was first recorded in the 10th century. It is thought to have arrived in Italy during the Mongol invasions. Even back then, tarragon was utilised not just as a peppery flavour but also for medical purposes. It was thought to help with poor digestion, nausea, flatulence, hiccups, rheumatism, gout, arthritis, and toothache, among other things. It is now known that tarragon includes active chemicals and essential oils that can be good for one's health. The leaves and stems of this plant contain carotene, alkaloids, essential oils, flavonoids, ascorbic acid, and coumarins. Tarragon has anti-inflammatory, hepatoprotective, and hyperglycemic, antibacterial, antifungal, anticancer, and antioxidant properties [23].

In folk medicine, the benefits of dried tarragon are due to its effect on digestive processes, since this plant increases appetite and has a positive effect on metabolism. In addition, it relieves seizures in patients with problems of the central nervous system, having a calming effect, because tarragon leaves contain a lot of vitamin C, rutin and other vital macro and microelements; it is an excellent alternative to artificial vitamin complexes for vitamin deficiency and frequent colds [24].

Tarragon as a seasoning

Tarragon is often used in the preparation of meat and fish dishes. Its aroma and taste go well with beef, chicken breast, pork, salmon and other types of meat and fish. Tarragon is used to prepare dishes with eggs, cheeses, chicken and other meats. Fresh tarragon can be mixed into potato salads, green salads, sandwiches, casseroles, soups and stews, and marinades [25]. In addition, it perfectly complements the taste of soups, sauces, marinades and dressings; dried and fresh tarragon are usually added to prepared sauces at the last minute. In classic French cuisine, tarragon is an important ingredient in several minor sauces, the most famous of which is Béarnaise sauce. In French cuisine, secondary sauces are derived from any of the classic “mother sauces”: hollandaise (Dutch), béchamel, tomato sauce, and violate sauce [26,27]. One of the main benefits of tarragon is that it can be used fresh or dried. Fresh tarragon has a brighter taste and aroma, while dried tarragon is more convenient to store and use. To achieve the best taste and aroma when using tarragon, adding it to the dish 5-10 minutes before the end of cooking is better. Thus, the herb will retain its beneficial properties and give the dish a unique taste.

Tarragon's antioxidant properties.

Tarragon is a rich source of antioxidants, which help fight harmful free radicals in the body. [28] confirmed that tarragon extracts can produce antioxidant effects. Cells are shielded from harm by antioxidants, lowering the chance of contracting cancer and heart disease, among other illnesses. In tarragon, quercetin is one of the most well-known antioxidants. Anti-inflammatory qualities, blood pressure regulation, and improved blood vessel health are all provided by quercetin. along with strengthening the immune system, it lowers the risk of cardiovascular disease. Furthermore, citric acid, a potent antioxidant, is found in tarragon. Assisting in the fight against damaging free radicals, cellular oxidation is prevented, and general health is enhanced by citric acid. Noticeably, adding tarragon to food can boost other foods' antioxidant properties. Another benefit of tarragon in cooking is its ability. For this reason, tarragon, which is high in antioxidants, is a crucial component in cooking to preserve health and shield the body from free radicals. Tarragon contains vitamin C, a powerful antioxidant that supports the immune system. In addition, this vitamin encourages the production of collagen, which is necessary for strong skin, hair, and nails. Additionally, tarragon contains vitamin A, which is necessary for healthy eyes, a strong immune system, and regular skin. Vitamin A is also beneficial for healthy bones and cell division. An extract of tarragon hydro-ethanolic was also investigated for antioxidant properties. The scientists then utilised various methods to examine antioxidant activity, including the DPPH test, which looked at radical scavenging activity; the -carotene/linoleate test, which measured reducing power by the ability to convert Fe^{3+} to Fe^{2+}; and the TBARS assay, which looked at lipid peroxidation. Ascorbic acid was employed as a positive control by Ribeiro et al. According to the findings, as a reducing agent, the extract works better [29].

Immune system stimulant

As a result of the emergence of bacterial and fungal resistance to antibiotics and other medications, as well as their potential risks to the environment, has led to fears of their excessive use due to the emergence of some of their negatives, such as a gradual decrease in their effectiveness, their accumulation in tissues, and immunosuppression [30]. Medicinal plants have been proposed as an alternative or adjuvant strategy to antibiotic treatment [31]. With tarragon serving as a vital source of physiologically active substances, including hydroxycinnamates, phenylpropanoids, flavonoids, alkamides, and coumarins, among others, the genus Artemisia is one of the most extensively used plant groupings among them [2]. This plant's antibacterial, antioxidant, and tonic qualities have long been appreciated, as have its advantageous effects on digestion [32]. This is what was found by [33] Hosseinzadeh and Farhoumand (2014) when used as nutritional supplements in feeding broiler chickens, and [34] Gholamhosseini et al. (2021) that tarragon extract showed strong immunity when added to the diet of Oncorhynchus mykiss through evaluation of haematological, biochemical, and immunological parameters in addition to the composition of the body and disease resistance. indicated [18]. The reason behind which an autoimmune condition that affects the central nervous system is called multiple sclerosis (MS) (CNS), it damages neurons and results in myelin loss.

Low blood sugar levels

Research suggests that some polyphenol compounds found in tarragon may help reduce high blood sugar (glucose) levels. This prevents the rise and fall of blood sugar levels and subsequent fluctuations in energy levels that lead to fatigue and poor performance. However, although it does have potential.

Heart attacks and strokes

Tarragon is very important in reducing heart attacks and strokes by preventing blood clotting. After all, it contains special compounds that inhibit platelets' activity, aggregation, and adhesion to the walls of blood vessels. Platelets are red blood cells that clot at the site of open wounds to stop bleeding. Platelets can aggregate inside blood vessels and cause heart attacks and strokes.

Anti-inflammatory and pain reliever

As a result of the abundance of essential oils (essential oil) in the leaves of the tarragon herb, tarragon contains eugenol, estragole, cineole, ocimene, and phellandrene. For instance, it has been demonstrated that cineole possesses anti-inflammatory qualities. Eugenol is used in dentistry as an analgesic, so chewing some fresh (French) tarragon leaves may help relieve minor toothaches.

Conclusion

Tarragon (*Artemisia dracunculus* L.) is a perennial herb with a long history in culinary tradition and medicine; it also possesses a wide range of health benefits [35]. The middle Sinai region of Egypt is home to smooth green leaves that thrive in warm, dry climates [36]. In addition to its long history in medicine, tarragon is used in the food business to flavour meat, sauces, and vinegar. It is also used in the cosmetics industry [37]. The usual way to get the health benefits of tarragon is through low-dose food intake rather than long-term. For tarragon to be used rationally in treating human diseases, a precise understanding of the effective dosage, safety and mechanism of action is necessary. Tarragon has several beneficial effects on the body, including digestive, antibacterial, antiviral, anti-inflammatory, antitumor, and antioxidant effects, as a result of the chemical composition of dried tarragon leaves (protein, carbohydrates, oil, fibre and ash, as well as being rich in polyphenol and flavonoid contents). And carotenoids. The antioxidant activity in dried tarragon leaves was high, and the most important phenolic compounds were benzoic acid, catechin, salicylic acid, and pyrogallol. Its antioxidants include alkamides, flavonoids, coumarin, isocoumarins, monoterpenoids, and sesquiterpenoids [38]. Tarragon extract possesses anti-parasitic, antifungal, sedative, anti-cough, immunomodulatory, and anticancer properties. [39]. As possible therapeutic agents against a wide range of disorders, flavonoids have attracted much attention. The most frequently found in therapeutic plants are the

flavonoids quercetin, kaempferol, luteolin, and apigenin [40]

REFERENCES

[1.] Lanciotti, R., Gianotti, A., Patrignani, F., Belletti, N., Guerzoni, M. E., and Gardini, F. (2004). Use of natural aroma compounds to improve shelf-life and safety of minimally processed fruits. Trends in food science and technology, 15(3-4), 201-208.

[2.] Grover, J. K., Yadav, S., and Vats, V. (2002). Medicinal plants of India with anti-diabetic potential. Journal of ethnopharmacology, 81(1), 81-100.

[3.] Kunle, O. F., Egharevba, H. O., & Ahmadu, P. O. (2012). Standardization of herbal medicines-A review. International journal of biodiversity and conservation, 4(3), 101-112.

[4.] World Health Organization. (2013). WHO traditional medicine strategy: 2014-2023. World Health Organization.

[5.] Céspedes, C. L., Avila, J. G., Martínez, A., Serrato, B., Calderón-Mugica, J. C., and Salgado-Garciglia, R. (2006). Antifungal and antibacterial activities of Mexican tarragon (Tagetes lucida). Journal of agricultural and food chemistry, 54(10), 3521-3527.

[6.] Tan, R. X., Zheng, W. F., & Tang, H. Q. (1998). Biologically active substances from the genus Artemisia. Planta medica, 64(04), 295-302.

[7.] Willcox, M. (2009). Artemisia species: from traditional medicines to modern antimalarials—and back again. The Journal of Alternative and Complementary Medicine, 15(2), 101-109.

[8.] Koul, B., Taak, P., Kumar, A., Khatri, T., & Sanyal, I. (2017). The Artemisia genus: A review on traditional uses, phytochemical constituents, pharmacological properties and germplasm conservation. J. Glycomics Lipidomics, 7(1), 142.

[9.] Dlugónska, H. (2015). The Nobel Prize 2015 in physiology or medicine for highly effective antiparasitic drugs. Annals of Parasitology, 61(4).

[10.] Efferth, T., Zacchino, S., Georgiev, M. I., Liu, L., Wagner, H., & Panossian, A. (2015). Nobel Prize for artemisinin brings phytotherapy into the spotlight. Phytomedicine, 22(13), A1-A3.

[11.] Aglarova, A. M., Zilfikarov, I. N., and Severtseva, O. V. (2008). Biological characteristics and useful properties of tarragon (Artemisia dracunculus L.) (review). Pharm. Chem. J. 42 (2), 81–86. doi:10.1007/s11094-008-0064-3

[12.] Bora, K. S., & Sharma, A. (2011). The genus Artemisia: a comprehensive review. Pharmaceutical biology, 49(1), 101-109.

[13.] Eisenman, S. W., and Struwe, L. (2011). The global distribution of wild tarragon (Artemisia dracunculus L.; Asteraceae) cytotypes with twenty-seven new records from North America. Genetic resources and crop evolution, 58, 1199-1212.

[14.] Mumivand, H., Babalar, M., Tabrizi, L., Craker, L. E., Shokrpour, M., and Hadian, J. (2017). Antioxidant properties and principal phenolic phytochemicals of Iranian tarragon (Artemisia dracunculus L.) accessions. Horticulture, Environment, and Biotechnology, 58, 414-422.

[15.] Hedaryan, A. H., Hamidpour, M., Ayatolahi, A. M., and Allah bakhshian Farsiani, M. (2019). The synergic effect of artemisia dracunculus (Tarragon) extract and Aspirin (ASA) on platelet function. Journal of Medicinal Plants, 18(70), 87-96.

[16.] Froushani, S. M. A., Zarei, L., Ghaleh, H. E. G., and Motlagh, B. M. (2016). Estragole and methyl-eugenol-free extract of Artemisia dracunculus possesses immunomodulatory effects. Avicenna journal of phytomedicine, 6(5), 526.

[17.] Fraternale, D., Flamini, G., and Ricci, D. (2015). Essential oil composition and antigermination activity of Artemisia dracunculus (Tarragon). Natural product communications, 10(8), 1934578X1501000839

[18.] Nowras, T., Fereidouni, M., Safari, H., and Naseri, M. (2019). The Effect of Aqueous Extract of Tarragon on Clinical Symptoms and T Cell Differentiation in Experimental Autoimmune Encephalomyelitis. Iranian Journal of Allergy, Asthma and Immunology, 523-532.

[19.] Çorapcı, B., Köstekli, B., Eyüboğlu, A., and Kocatepe, D. (2020). The effect of different application methods of sumac (Rhus coriaria) and tarragon (Artemisia dracunculus) on some quality properties of marinated sea bream (Sparus aurata L., 1758). J. Food Process. Preserv. 44 (10), e14751. doi:10.1111/jfpp.14751

[20.] PLANT, A. D. (2023, May). Pharmaceutical Sciences. In The 4 th International scientific and practical conference "European scientific congress"(May 15-17, 2023) Barca Academy Publishing, Madrid, Spain. 2023. 487 p. (p. 115).

[21.] Mumivand, H., Babalar, M., Tabrizi, L., Craker, L. E., Shokrpour, M., and Hadian, J. (2017). Antioxidant properties and principal phenolic phytochemicals of Iranian tarragon (Artemisia dracunculus L.) accessions. Horticulture, Environment, and Biotechnology, 58(4), 414–422.

[22.] Sharopov, F. S., Salimov, A., Numonov, S., Bakri, M., Sangov, Z., Habasi, M., ... and Setzer, W. N. (2020). Phytochemical study on the essential oils of Tarragon (Artemisia dracunculus L.) growing in Tajikistan and its comparison with the essential oil of the species in the rest of the world. Natural Product Communications, 15(12), 1934578X20977394.

[23.] Pripdeevech, P., and Wongpornchai, S. (2012). Tarragon. In Handbook of Herbs and Spices (pp. 504-511). Woodhead Publishing.
[24.] Hassanzadeh, M. K., Najaran, Z. T., Nasery, M., and Emami, S. A. (2016). Tarragon (Artemisia dracunculus L.) oils. In Essential Oils in Food Preservation, Flavor and Safety (pp. 813-817). Academic Press.
[25.] Norman, J. (2015). Herb and Spices the Cook's Reference: Over 200 Herbs and Spices, with Recipes for Marinades, Spice Rubs, Oils and more. Dorling Kindersley Ltd.
[26.] Tebben, M. (2014). Sauces: A Global History. Reaktion Books.
[27.] Stefanaki, A., and van Andel, T. (2021). Mediterranean aromatic herbs and their culinary use. In Aromatic Herbs in Food (pp. 93-121). Academic Press.
[28.] Behbahani, B. A., Shahidi, F., Yazdi, F. T., Mortazavi, S. A., and Mohebbi, M. (2017). Antioxidant activity and antimicrobial effect of tarragon (Artemisia dracunculus) extract and chemical composition of its essential oil. Food Measure 11 (2), 847–863. doi:10.1007/s11694-016-9456-3
[29.] Ribeiro, A., Barros, L., Calhelha, R. C., Carocho, M., Ćirić, A., Sokovic, M. and Ferreira, I. C. (2016). Tarragon phenolic extract as a functional ingredient for pizza dough: Comparative performance with ascorbic acid (E300). Journal of Functional Foods, 26, 268-278.
[30.] Dawood, M. A., and Koshio, S. (2016). Recent advances in the role of probiotics and prebiotics in carp aquaculture: a review. Aquaculture, 454, 243-251.
[31.] Immanuel, G., Vincybai, V. C., Sivaram, V., Palavesam, A., and Marian, M. P. (2004). Effect of butanolic extracts from terrestrial herbs and seaweeds on the survival, growth and pathogen (Vibrio parahaemolyticus) load on shrimp Penaeus indicus juveniles. Aquaculture, 236(1-4), 53-65.
[32.] Liu, T., Lin, P., Bao, T., Ding, Y. U., Lha, Q., Nan, P., Huang, Y., Gu, Z., and Zhong, Y. (2018). Essential oil composition and antimicrobial activity of Artemisia dracunculus L. var. qinghaiensis YR Ling (Asteraceae) from Qinghai-Tibet Plateau. Industrial Crops and Products, 125, 1–4.
[33.] Hosseinzadeh, Z., and Farhoomand, P. (2014). The effects of Artemisia dracunculus' powders different levels on blood parameters and internal organs weight broiler chickens. International journal of Advanced Biological and Biomedical Research, 2(3), 661–668.
[34.] Gholamhosseini, A., Hosseinzadeh, S., Soltanian, S., Banaee, M., Sureda, A., Rakhshaninejad, M., ... and Anbazpour, H. (2021). Effect of dietary supplements of Artemisia dracunculus extract on the haemato-immunological and biochemical response, and growth performance of the rainbow trout (Oncorhynchus mykiss). Aquaculture Research, 52(5), 2097-2109.
[35.] Ribnicky, D. M., Roopchand, D. E., Poulev, A., Kuhn, P., Oren, A., Cefalu, W. T., and Raskin, I. (2014). Artemisia dracunculus L. polyphenols complexed to soy protein show enhanced bioavailability and hypoglycemic activity in C57BL/6 mice. Nutrition, 30(7-8), S4-S10.
[36.] El-Sayed, A., Sidky, M., Mansour, H., and Mohsen, M. (2009). Effect of organic fertilizer and Egyptian rock phosphate on the growth, chemical composition and oil production of tarragon (Artemisia dracunculus, L.). Journal of Productivity and Development, 14(1), 87-110.
[37.] Ekiert, H., Świątkowska, J., Knut, E., Klin, P., Rzepiela, A., Tomczyk, M., and Szopa, A. (2021). Artemisia dracunculus (Tarragon): A review of its traditional uses, phytochemistry and pharmacology. Frontiers in Pharmacology, 12, 653993.
[38.] Eisenman, S. W., Poulev, A., Struwe, L., Raskin, I., and Ribnicky, D. M. (2011). Qualitative variation of anti-diabetic compounds in different tarragon (Artemisia dracunculus L.) cytotypes. Fitoterapia, 82(7), 1062-1074.
[39.] Wang, Z. Q., Ribnicky, D., Zhang, X. H., Zuberi, A., Raskin, I., Yu, Y., and Cefalu, W. T. (2011). An extract of Artemisia dracunculus L. enhances insulin receptor signaling and modulates gene expression in skeletal muscle in KK-Ay mice. The Journal of nutritional biochemistry, 22(1), 71-78.
[40.] Duric, K., Kovac-Besovic, E. E., Niksic, H., Muratovic, S., and Sofic, E. (2015). Anticoagulant activity of some Artemisia dracunculus leaf extracts. Bosnian journal of basic medical sciences, 15(2), 9.

الطرخون (*Artemisia dracunculus* L.) نبات بيولوجي طبي وغذائي واقتصادي. (مقالة مراجعة).

زيد خليل كاظم علا حمزة محمود أسماء علي جلاوي حنان عادل حسن

قسم البستنة وهندسة الحدائق، كلية الزراعة، جامعة كربلاء، العراق.

الخلاصة

كان الهدف من هذه المراجعة هو التعرف على الطرخون (***Artemisia dracunculus)***، من الناحية الكيميائية والطبية، وتحديد مستقلباته الثانوية، وهو عشب طهي يستخدم كمكمل غذائي وفي العديد من الأطباق، وكذلك طبيًا. وتشمل مركبات الايض الثانوية النشطة بيولوجيًا الزيوت الأساسية والكومارين والفلافونويدات وأحماض الكربونيك الفينولية والعناصر المعدنية والفيتامينات الأخرى. ومن المعروف أنه يمتلك نشاطًا مضادًا للميكروبات ضد مجموعة واسعة من الأنواع البكتيرية، بما في ذلك بكتيريا المكورات العنقودية الذهبية، وبكتيريا الشيغيلا ***Shigella*** ، ووبكتيريا الليستيريا المستوحدة ***Listeria monocytogenes*** ، ووبكتيريا الزائفة الزنجارية ***Pseudomonas aeruginosa***، وبكتيريا المكورات العنقودية البشروية ***taphylococcus epidermidis*** ، وبكتيريا العصيات الرقيقة ***Bacillus subtilis***، وبكتيريا الإشريكية القولونية ***Escherichia coli (RSHI ATCC 25922)***. له نشاط مبيد للجراثيم ضد هيليكوباكتر بيلوري ويعالج مشاكل الجهاز الهضمي، وضعف الشهية، واحتباس الادرار، وألم الأسنان. تشمل إجراءاته الهضمية العلاجية تحفيز الشهية، وتخفيف التشنج، وخصائص ملين. كما أن لديها خصائص مدرة للبول ومفرز الغدة الصفراء. يستخدم كمضاد للأكسدة بسبب محتواه الكيميائي الذي يحمي الخلايا من الجذور الحرة.

الكلمات المفتاحية: الطرخون، نبات الطرخون الغذائي، النباتات الطبية، النجمية، الخصائص المضادة للأكسدة.