WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 8.084
Volume 10, Issue 11, 725-733. Review Article ISSN 2277– 7105

A REVIEW ON PARSLEY

Manju Jakhar*, Anisha Sharma and Roshmi Ray

Baddi University of Emerging Sciences and Technology, Makhnumajra, Distt. Solan, Baddi, Himachal Pradesh, India.

Article Received on
05 July 2021,

Revised on 25 July 2021,
Accepted on 15 August 2021

DOI: 10.20959/wjpr202111-21454

***Corresponding Author**
Manju Jakhar
Baddi University of Emerging Sciences and Technology, Makhnumajra, Distt, Baddi, Himachal Pradesh, India.

ABSTRACT

To gather a comprehensive understanding of ethnomedicinal uses, Phytochemistry, and other relevant subjects. And the pharmacological characteristics of parsley (Petroselinum crispum) are a biennial herb that belongs to the carrot family (Apiaceae). It has been cultivated all throughout the world for thousands of years and utilised in culinary flavouring, essential oil applications, and traditional medicine. Apiole, myristicin, -pinene, and elemicin are all found in parsley. The amount of each of these chemical constituents differs depending on the species or cultivar, as well as cultivation conditions such as soil type, weather, irrigation, pruning, and other horticultural procedures. Parsley is used in a wide range of industries, including food, cosmetics, and pharmaceuticals. The number of uses and applications for parsley by-products is constantly growing. Additional research is needed on how to improve production per field and the optimum preservation and oil extraction procedures, especially in the developing countries where parsley leaf and flower selection and post-harvest processing are still really traditional.

KEYWORDS:- Parsley, Petroselinum crispum, Immunomodulatory activity, Antidiabetic activity.

INTRODUCTION

In some regions, Petroselinum crispum (mill.) Nym.Ex A.W. Hill and Petroselinum hortence Hoffm. The Mediterranean region gave birth to parsley, which is currently farmed all over the world. Parsley is a glabrous-surfaced biennial plant. It can up to a height of 60 to 100 cm and has many branches that develop from a single root. Fusiform to tuberous roots are thick or thin, vertical, and fusiform to tuberous. The leaves are tripinnate and cylindrical. Yellowish umbels on long pedicled terminal inflorescences. On the involucre, there are one or two

sepals. The petals are stretched out with a curled tip. The style's thickness is quite sophisticated. The greenish-gray fruit is 2.5 mm long, orbicular ovate, and orbicular ovate. In addition to being commonly consumed as a green vegetable and garnish, it is used for a variety of medicinal purposes in traditions and folklore medicine in numerous countries. Parsley has a wide range of compounds from a variety of phytochemical groups. A range of pharmacological qualities has also been connected to this plant. Data was collected from 1966 to 2013. (Up to June). The search terms were "parsley," "Petroselinum crispum," and "Petroselinum hortence."There were no restrictions on the type of language that may be employed. In the reference lists of the retrieved papers, more relevant research was discovered. All previous studie's works were evaluated, as well as abstracts given at symposia. In vitro, in vivo, and human study data were separated and compiled.[1]

Background

Parsley (Petroselinum crispum) is a Mediterranean plant that is now cultivated all over the world. Parsley has been grown for over 2,000 years, but it was originally employed in medicine rather than as food. Petroselinum is derived from the Greek words "petra" and "selinin," which mean "stone or rock" and "celery," respectively. The plant parsley was named after Pedanius Dioscorides, a Greek physician who lived during the early Roman Empire (100 A.D.). Parsley was considered sacred by the ancient Greeks, who used it to embellish both winners of athletic contests and the dead's tombs. The use of parsley as a garnish can be dated all the way back to the Middle Ages. The use of parsley as a garnish has a lengthy history that can be traced all the way back to ancient Roman culture. While the exact date when parsley became used as a flavoring is unknown, it appears to have been somewhere around the Middle Ages in Europe. Because he had it grown on his estates, some historians credit Charlemagne with popularizing it. The curly leaf type is more popular in various regions. People were generally hesitant to eat the flat- leaf form since it resembled fool's parsley, a harmful herb. This may have contributed to the ancient predilection for this form. Turnip-rooted (or Hamburg) parsley is a comparatively new species that have only lately begun to acquire popularity, having only been created within the last two hundred years. The plant parsley is widely used as a spice nowadays, and it is growing all across the world.[2]

Location

Although parsley can be grown in a wide range of climates and environments, the best circumstances are found in countries with warm temperatures. The primary ecological conditions for parsley cultivation are warmth, light, and humidity. Pakistan, India, Madagascar, Thailand, Indonesia, Egypt, Morocco, France, Israel, Bulgaria, USA, Southern Italy, Portugal, Greece, Spain, Algeria, Malta, Morocco, and Tunisia, Russia and South Africa, Turkey, Germany, Hungary, and Poland produce parsley as a spice, herb, and vegetable.[3]

Pharmacological uses

- **Antioxidant activity**

The addition of Petroselinum crispum leaves to the diets of 14 participants for one week resulted in a substantial increase in antioxidant enzymes when compared to the control group's diet. Apigenin was found to be the primary chemical responsible for Petroselinum crispum's action.[4] In vitro tests revealed that three different extracts from Petroselinum crispum leaves and stems had antioxidant capabilities.[3-7] The essential oil from the seed had antioxidant action in vitro. Its antioxidant action was attributed to two components: apiol and myristicin.[8]

- **Antidiabetic activity**

In normal mice, extracts from Petroselinum crispum leaves improved liver and blood antioxidant function. The extracts, and on the other hand, demonstrated both protective and deteriorating effects on the liver and blood antioxidant function in carbon tetrachloride (CCl(4)) generated oxidative stress animals.[5] Petroselinum crispum leaves showed hepatoprotective effects in diabetic mice by lowering blood glucose levels and demonstrating antioxidant activity.[9-10] According to Yanarda et al, the antihyperglycemic activity of Petroselinum crispum is not linked to the improvement and regeneration of pancreatic islet secretory granules and -cells.[11] Additionally, Petroselinum crispum's antioxidant activity in the heart and aorta tissue reduces hyperglycemia-induced heart and aorta oxidative damage.[12] In diabetic rats, however, it had no significant effect on non-enzymatic glycosylation of epidermal proteins.[13]

- **Analgesic and Spasmolytic activity**

In mice, a hydroalcoholic extract of Petroselinum crispum seed showed analgesic action.[14] It also blocked voltage-gated calcium channels, which attenuated KCl and CaCl2-induced contractions on rat isolated ileum in a dose-dependent manner.[15]On spontaneous and acetylcholine-induced contractions in rat isolated ileum, three different extracts from aerial portions showed antispasmodic efficacy.[16]

- **Immunomodulating activity**

By reducing the function of splenocytes and macrophages, an essential oil from Petroselinum crispum seed reduced humoral and cellular immune responses.[17]

- **Gastrointestinal activity**

The anti-secretory and cytoprotective activity of ethanol extract from Petroselinum crispum leaves were found to be effective in rat models of peptic ulcers.[18] Aqeous extract from Petroselinum hortense beans showed laxative efficacy in rats via increasing sodium and water absorption as well as the activity of the Na-KCl2 transporter in the colon.[19]

- **Effects on the genitourinary system**

In an estrogen-sensitive breast cancer cell line (MCF-7) methanol extract from the pseudomonas crispum aerial portion demonstrated proliferative activity comparable to isoflavone glycosides from soybean. Flavone glycosides, such as 6"-acetylation, and aglicones, such as apigenin, diosmetin, and kaempferol, were found to have estrogenic action. Furthermore, oral administration of the extract restored uterine weight in ovariectomized mice, with apiin and apigenin being the active ingredients.[20] Pseudomonas crispum oil showed considerable protection against zearalenone-induced reproductive toxicity, as well as enhanced testosterone levels, testosterone levels, and sperm motility, and suppressed chromosomal abnormalities in germ cells.[21] In the kidney cortex and medulla, aqueous extract of pseudomonas hortense seeds had a diuretic effect and reduced Na+-K+ ATPase activity.[22]

- **Cardiovascular activity**

In anesthetized rats, Pseudomonas crispum leaves reduced mean blood pressure measured from the carotid artery. With muscarinic receptor antagonist, this impact was reduced. It also reduced the pace and number of contractions in isolated rat atria that had been weakened by a muscarinic antagonist. Pseudomonas crispum has hypotensive, negative inotropic, and

chronotropic action, according to these findings.[23] The leaves of pseudomonas crispum had a high antiplatelet aggregation action. Keampferol, apigenin, and cosmosiin are aglycone flavonoids that are responsible for this action. In vitro, however, it had no effect on clotting activity.[24-26]

- **Antimicrobial and Cytotoxic activity**

The leaves and stems of Pseudomonas crispum have antibacterial action against B. Subtilis and E. coli.[27] Antibacterial activity of hot and cold water extracts from pseudomonas crispum leaves against pseudomonas aeruginosa, S. aureus, and S. pyogenes isolated from burn patients.[28] Lactobacillus plantarum and Leuconostoc mesenteroides were suppressed by an ethanol extract of pseudomonas crispum leaves.[29] Pseudomonas fragi was not inhibited by the furocoumarins extracted from pseudomonas crispum leaves, which had an inhibitory effect against E. coli, L. monocytogenes, Erwinia carotovora, and Listeria innocua. Antimicrobial furocoumarins such as psoralen, 8-methoxypsoralen, 5-methoxypsoralen, oxypeucedanin, and isopimpinellin were found to be responsible.[30] Antibacterial activity of essential oil from the aerial part of Petroselinum crispum against Listeria innocua, Serratia marcescens, and Pseudomonas fluorescens was negative.[31] In vitro, a methanol extract of Petroselinum crispum leaves showed antibacterial action against B. Subtilis, P. aeruginosa, S. Epidermidis, S. Aureus, and S. Cerevisiae. Coumarins are the active ingredients in this property.[32]

Other uses

Many herbs and spices, despite their minimal usage, contribute significantly to health since they are high in antioxidants and specific mineral components. It's unclear how much fenugreek should be ingested in order to reap the health advantages. Researchers do not have a specific recommendation for the amount of parsley to be consumed; nonetheless, parsley is high in antioxidants and a rich source of certain minerals and dietary fiber. Many health food stores sell parsley oil, despite the fact that there is insufficient scientific evidence to support its value in human health. Whatever one's taste and preference, parsley can be a terrific addition to one's kitchen; it gives food/dishes personality while also providing health advantages.[33]

CONCLUSION

Parsley has antioxidant, hepatoprotective, neuroprotective, antidiabetic, analgesic, spasmolytic, immunosuppressive, anticoagulant, anti-ulcer, laxative, estrogenic, diuretic, hypotensive, antibacterial, and antifungal properties. The beneficial effects of the pseudomonas crispum on the gastrointestinal system, which have been reported in the ethnomedicine of numerous countries, have been proven in current scientific investigations via spasmolytic, analgesic, gastroprotective, antisecretive, and laxative processes. Furthermore, diuretic activity was used to demonstrate the beneficial effects of pseudomonas crispum on urinary tract illness. Its antibacterial activity could explain its antiseptic effect on the urinary tract. The anti-platelet, anti-coagulant, spasmolytic, analgesic, and estrogenic activities of pseudomonas crispum can be linked to its ethnomedical use on amenorrhea and dysmenorrhea. Furthermore, estrogenic and utrerine tonic activity may be responsible for the abortive characteristic. Pseudomonas crispum has been shown to be effective in the treatment of heart disease and hypertension, which could be due to its hypotensive, anti-platelet, and negative inotropic and chronotropic mechanisms. Parsley should not be consumed during pregnancy due to allegations that it has abortive qualities. phenolic compounds, including flavonoids (such as apigenin, apiin, and 6" Acetylapiin), essential oil components (such as Myristicin and apiol), coumarins, and furocoumarins, have been identified and detected in Petroselinum crispum. Many bioactive components in Petroselinum crispum have been extracted and identified, although many active chemicals responsible for ethnomedicinal uses or proven pharmacological activity have not been fully studied. As a result, new research is being proposed to isolate, identify, and extract the active chemicals in Petroselinum crispum in order to discover a unique natural component for breaking the deadlock in modern medicine. Overall, this study is expected to change attitudes regarding Petroselinum crispum as a useful and significant medicinal plant with a broad range of established therapeutic efficacy.

REFERENCES

1. Mohammad Hosein Farzaei, Zahra Abbasabadi, Mohammad Reza Shams Ardekani,et al. Parsley: a review of ethnopharmacology, phytochemistry and biological Activities. Journal of Traditional Chinese Medicine, 2013; 33(6): 815-826.
2. Sidra Sarwar1, Muhammad Adnan Ayyub1, Meriam Rezgui2, et al. Parsley: A review of habitat, phytochemistry, ethnopharmacology and biological activities. IJCBS,. internatinal journal of chemical and biochemical. (ISSN 2226-9614), 2016; 9: 49-55.

3. Wong PYY, Kitts DD, Studies on the dual antioxidant and antibacterial properties of parsley (Petroselinum crispum) and cilantro (Coriandrum sativum) extracts.
4. Nielsen SE, Young JF, Daneshvar B, et al, Effect of parsley (Petroselinum crispum) intake on urinary apigenin excretion, blood antioxidant enzymes and biomarkers for oxidative stress in human subjects. Br J Nutr, 1999; 81(6): 447-455.
5. Mira PopoviÇ, Biljana KaurinoviÇ1, Vida JakovljeviÇ2, et al. Effect of Parsley (Petroselinum crispum (Mill.) Nym. ex A.W. Hill, Apiaceae) Extracts on some Biochemical Parameters of Oxidative Stress in Mice treated with CCl4. Phytother Res, 2007; 21(8): 717-723.
6. S Fejes , A Blázovics, E Lemberkovics, et al., Free radical scavenging and membrane protective effects of methanol extracts from Anthriscus cerefolium L. (Hoffm.) and Petroselinum crispum (Mill.) nym. ex A.W. Hill. Phytother Res, 2000; 14(5): 362-365.
7. Shreya R Vora , Rahul B Patil, Meena M Pillai., Protective effects of Petroselinum crispum (Mill) Nyman ex A. W. Hill leaf extract on D-galactose-induced oxidative stress in mouse brain. Indian J Exp Biol, 2009; 47(5): 338-342.
8. Hui Zhang, Feng Chen, Wang X, et al., Evaluation of antioxidant activity of parsley (Petroselinum crispum) essential oil and identification of its antioxidant constituents Food Research International, 2006; 39(8): 833-839.
9. S Bolkent [1], R Yanardag, O Ozsoy-Sacan, O Karabulut-Bulan., Effects of parsley (Petroselinum crispum) on the liver of diabetic rats: a morphological and biochemical study. Phytother Res, 2004; 18(12): 996-999.
10. Ozlem Ozsoy-Sacan [1], Refiye Yanardag, Haci Orak et al. Effects of parsley (Petroselinum crispum) extract versus glibornuride on the liver of streptozotocin-induced diabetic rats. Ethnopharmacol, 2006; 104(1-2): 175-181.
11. Refiye Yanardağ , Sehnaz Bolkent, Ayse Tabakoğlu-Oğuz. Effects of Petroselinum crispum extract on pancreatic B cells and blood glucose of streptozotocin-induced diabetic rats. Biol Pharm Bull, 2003; 26(8): 1206-10.
12. G¨OKSEL SENER,¨OZLEMSAC¸AN, REFIYE YANARDAG, Effects of parsley (Petroselinum crispum) on the aorta and heart of Stz induced diabetic rats.Plant Foods for Human Nutrition, 2003; 58: 1–7.
13. T Tunali , A Yarat, R Yanardağ, et al. Effect of parsley (Petroselinum crispum) on the skin of STZ induced diabetic rats. Phytother Res, 1999; 13(2): 138-141.

14. N Behtash, F Kargarzadeh, H Shafaroudi. Analgesic effects of seed extract from Petroselinum crispum (Tagetes minuta) in animal models. Toxicol latt, 2008; (180,5): S127-S128.
15. A A Moazedi [1], D N Mirzaie, S M Seyyednejad, Spasmolytic effect of Petroselinum crispum (Parsley) on rat's ileum at different calcium chloride concentrations. Pak J Biol Sci, 2007; 15, 10(22): 4036-42.
16. Suzana Branković [1], Dusanka Kitić, Mirjana Radenković,et al. [Relaxant activity of aqueous and ethanol extracts of parsley (Petroselinum crispum (Mill) Nym. ex A. W Hill, Apiaceae) on isolated ileum of rat][Article in Serbian] Med Pregl, 2010; 63(7-8): 475-8.
17. Alireza Yousofi [1], Saeed Daneshmandi, Neda Soleimani, et al. Immunomodulatory effect of Parsley (Petroselinum crispum) essential oil on immune cells: mitogen-activated splenocytes and peritoneal macrophages. Immunopharmacol Immunotoxicol, 2012; 34(2): 303-308.
18. Tawfeq Al-Howiriny, Mohammed Al Sohaibani, Kamal El-Tahir et al. Prevention of experimentally-induced gastric ulcers in rats by an ethanolic extract of "Parsley"Petroselinum crispum. Am J Chin Med, 2003; 31(5): 699-711.
19. S.I.Kreydiyyeh, J.Usta, I.Kaouk, et al. The mechanism underlying the laxative properties of Parsley extract. Phytomedicine, 2001; 382-388.
20. M Yoshikawa [1], T Uemura, H Shimoda, et al. Medicinal foodstuffs. XVIII. Phytoestrogens from the aerial part of Petroselinum crispum MIll. (Parsley) and structures of 6"-acetylapiin and a new monoterpene glycoside,petroside. Chem Pharm Bull, 2000; 48(7): 1039-1044.
21. Mosaad A. Abdel-Wahhab, Samir Abbes, Jalila Ben Salah-Abbes,et al. Parsley oil protects against Zearalenone-induced alteration in reproductive function in male mice. Toxicol Lett, 2006; 164: S266.
22. Sawsan Ibrahim Kreydiyyeh [1], Julnar Usta, Diuretic effect and mechanism of action of parsley. J Ethnopharmacol, 2002; 79(3): 353-357.
23. Brankovic S, Djosev S, Kitic D et al. Hypotensive and negative chronotropic and inotropic effects of the aqueous and ethanol extract from parsley leaves. J Clin Lipidol, 2008; 2(5) (1): S191, S408.
24. Chaves DS, Frattani FS, Assafim M, et al.Phenolic chemical composition of Petroselinum crispum extract and its effect on haemostasis. Nat Prod Commun, 2011; 6(7): 961-964.

25. Dounia Gadi [1], Mohamed Bnouham, Mohammed Aziz, et al. Flavonoids purified from parsley inhibit human blood platelet aggregation and adhesion to collagen under flow. J Complement Integr Med, 2012; 9: article 19. doi: 10.1515/1553-3840.1579.
26. Dounia Gadi [1], Mohamed Bnouham, Mohammed Aziz et al. Parsley extract inhibits in vitro and ex vivo platelet aggregation and prolongs bleeding time in rats. J Ethnopharmacol, 2009; 125(1): 170-174.
27. Wong PYY, Kitts DD. Studies on the dual antioxidant and antibacterial properties of parsley (Petroselinum crispum) and cilantro (Coriandrum sativum) extracts. Food Chem, 2006; 97(3): 505-515.
28. Ahmed Abdul Jabbar Jaloob Aljanaby. Antibacterial activity of an aqueous extract of Petroselinum crispum leaves against pathogenic bacteria isolated from patients with burns infections in Al-najaf Governorate, Iraq. Res Chem Intermed, 2013; 39 (8): 3709-3714.
29. Kim OM, Kim MK, Lee SO et.al., Antimicrobial effect of ethanol extracts from spices against Lactobacillus plantarum and Leuconostoc mesenteroides isolated from kimchi. Journal of the Korean Society of Food Science and Nutrition, 1998; 27(3): 455-460.
30. M M Manderfeld [1], H W Schafer, P M Davidso. Isolation and identification of antimicrobial furocoumarins from parsley. J Food Protect, 1997; 60(1): 72-77.
31. M.Viuda Martos[a]M.A.Mohamady[b]J.Fernández-López et al. In vitro antioxidant and antibacterial activities of essentials oils obtained from Egyptian aromatic plants. Food Control, 2011; 22(11): 1715-1722.
32. T Ojala , S Remes, P Haansuu, et al. Antimicrobial activity of some coumarin containing herbal plants growing in Finland. J Ethnopharmacol, 2000; 73(1): 299-305.
33. Shafaq Nisar, Sidra Sarwar1, Muhammad Adnan Ayyub, et al. Parsley: A review of habitat, phytochemistry, ethnopharmacology andbiological activities. January, 2016.