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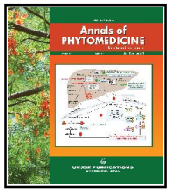

Invited Commentary : Open Access

Unveiling the hidden treasures: Underexploited herbs and spices beneficial to mankind

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Nature offers a bountiful and diverse array of herbs and spices, each possessing distinctive properties that not only enhance culinary experiences but also contribute to overall well-being. While some of these plants have cemented their place in our everyday lives; there remains a plethora of lesser-known and overlooked herbs and spices that can offer significant benefits for humanity.

Herbs and spices have been an integral part of culinary history, contributing not only to the flavour of our cuisines but also to our health and well-being. While some herbs and spices are well-known and widely used, there exists a vast array of underutilized botanical treasures that are rich in nutritional and medicinal benefits (Reddy *et al.*, 2023). Many herbs can be utilised as therapeutic plants because of their phytochemical content. As a result, there is a surge in demand for pharmaceutical products made from medicinal plants around the world. The World Health Organisation has mandated that quality control tests be performed on herbal products in order to ensure their potency and safety. Chemical, physical, biological properties and purity along with the production process are used as the basis for quality control. Exploring these lesser-known herbs and spices can open new avenues for culinary application and holistic health benefit (Rani *et al*., 2023). In this article, we will discuss some of the underutilized herbs and spices that hold great potential for enhancing human health.

Ashwagandha: *Withania somnifera* (L). Dunal

Ashwagandha, a short shrub belonging to the family Solanaceae, also known as Indian ginseng or winter cherry, has been a staple in Ayurvedic medicine for centuries (Barde and Wadnerwar, 2023). Known for its adaptogenic properties, ashwagandha helps the body adapt to stress and promotes overall well-being. *W. somnifera* consists of a large array of biologically active phytoconstituents including alkaloids, steroids, saponins, glucosides, phenolics and flavonoids. Research suggests that it may have properties such as anti-inflammatory and antioxidant characteristics, making it a potential medicinal plant in the fight against various fatal diseases (Chandrasekhar *et al*., 2012).

Borage: *Borago officinalis* L.

Borage or *B. officinalis*, also known as starflower, is an annual herb belonging to the family Boraginaceae, native to Asia and Europe, with vibrant blue flowers. The leaves and flowers of the plant are edible. It contains gamma-linolenic acid, an essential fatty acid with anti-inflammatory properties. Borage has been used traditionally to alleviate skin conditions and reduce inflammation. The oil extracted from *B. officinalis* seeds is used to treat conditions such as asthma, gastrointestinal and inflammatory disorders, atherosclerosis, Alzheimer's disease, *etc*. The infusions of borage leaf and seeds are used to prepare pharmaceutical infusions (Tewari *et al.,* 2019).

Epazote: *Dysphania ambrosioides* (L). Mosyakin and Clemants

Epazote commonly known as Mexican tea, belonging to the family Amaranthaceae, is widely used in Mexican cuisine. Epazote is a herb with a distinctive flavour and aroma. Apart from its culinary uses, epazote has been employed traditionally, for its medicinal properties and its ability to aid digestion and expel intestinal parasites (Vargas-Mendoza *et al*., 2012). The essential oil of epazote is made up of up to 70% ascaridole, limonene, p-cymene, and smaller amounts of numerous other monoterpenes. Research on its antimicrobial and antiparasitic properties opens up new possibilities for its use in modern medicine.

Sumac: *Rhus* spp.

Sumac are deciduous shrubs, about 35 species of flowering plants in the genus *Rhus* and related genera in the cashew family Anacardiaceae. It is a versatile spice with a tangy flavour, often used in Middle Eastern cuisine. Rich in antioxidants, Sumac has potential anti-inflammatory and antimicrobial properties. Recent studies suggest that Sumac may be a valuable addition to the arsenal of natural remedies for conditions related to oxidative stress and inflammation (Sakhr and Khatib, 2020).

Sweet annie: *Artemisia annua* (L.)

Sweet annie, *A .annua,* is an annual herb, which belongs to the family of Asteraceae. It is known for its potential antimalarial properties against the parasite, *Plasmodium falciparum* due to the presence of artemisinin. Sweet annie has been a focus of scientific research in recent times. Studies indicate that the herb, beyond its antimalarial effects, possesses anti-inflammatory and anticancer properties (Efferth, 2017). The potential applications of sweet annie extend beyond traditional medicine, hinting at its promise in addressing modern health challenges.

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Szechuan pepper: *Zanthoxylum simulans*

Szechuan pepper or *Z. simulans* belonging to the family Rutaceae, is a key ingredient in Chinese cuisine and also in north-east India and Nepal. It is not just a flavour enhancer but also harbours potential health benefits. Studies suggest that compounds in Szechuan pepper may possess anti-inflammatory and neuroprotective properties (Wang *et al.,* 2022). Exploring its use in traditional medicine, could yield new insights into its therapeutic potential.

Grains of paradise: *Aframomum melegueta* K. Schum.

Grains of paradise or *A. melegueta*, often referred to as the cousin of ginger or Guinea pepper, belong to the family Zingiberaceae. Grains of paradise have a peppery flavour with hints of citrus. Gingerols are the main phytochemical found in the plant which are putatively identified as 6-gingerol, 6-shogaol and 6-paradol. Studies indicate that it possesses anti-inflammatory and antioxidant properties, making it a very useful spice to manage inflammatory conditions. It is also known for its traditional use in promoting digestion (Adewusi and Afolayan, 2010).

Lovage: *Levisticum officinale* W. D. J. Koch

Lovage or *L. officinale,* is a tall perennial herb belongs to the family Apiaceae, with a taste reminiscent of celery. It has been underutilized in modern cuisine. It contains compounds with such as phenolic acids, essential oils with potential diuretic and anti-inflammatory effects. The leaves and seeds are often used in seasoning and the rhizome and roots are used medicinally. Lovage is one of the principal ingredients in many diuretic tea mixtures and is used to treat kidney stones, jaundice, malaria, sore throat, pleurisy, rheumatism, gout and boils. Lovage has historically been used to alleviate digestive issues and may offer cardiovascular benefits (Vogl *et al.,* 2013).

Canistel or egg fruit: *Pouteria campechiana* (Kunth) Baehni

P. campechiana, the plant known commonly as canistel or egg fruit belongs to the family Sapotaceae. Distributed in tropical and subtropical areas, it looks like a slender, erect tree reaching a maximum height of eight metres. The fruits are variable in shape. It is traditionally used in countries such as Cuba and Mexico as a medicine to heal skin diseases, liver, coronary diseases epilepsy, and different types of ulcers. A study was carried out to investigate the antioxidant, neuroprotective and hepatoprotective properties of fruit extracts of *P. campechiana*. From various study, it was evident that the plant is rich in polyphenolic and flavonoid compounds. The studies also elucidated that the fruit extracts eliminated free radicals in antioxidant models. Therefore, it is evident that plant is highly promising for the development of new drugs with neuroprotective, hepatoprotective and antioxidant action (Do *et al.,* 2023).

While mainstream herbs and spices undoubtedly contribute to the rich variety of flavours in our meals; however the underutilized herbs and spices mentioned above offer a treasure trove of potential health benefits. As we delve deeper into the intricacies of these natural wonders, it is essential to combine traditional knowledge with modern scientific research to fully unlock their potential for the benefit of mankind. By incorporating these underutilized herbs and spices into our daily lives, we not only enrich our culinary experiences but also tap into a vast reservoir of natural remedies. As we continue to explore the intricate connections between plants and human health, these botanical wonders may play a pivotal role in shaping the future of holistic well-being.

The increasing prominence of phytomedicine across disciplines necessitates a rise in reputable journals. "**Annals of Phytomedicine**: **An International Journal**" endeavours to meet this demand, committed to publishing cutting-edge research in phytomedicine. While numerous journals focus on this scientific branch, only a few include articles from multidisciplinary areas. "**Annals of Phytomedicine**" stands out by addressing the needs of scientists in various related disciplines, promoting publications on medicinal plants, and inviting stakeholder commentaries. Unlike many journals in this field, it welcomes multidisciplinary articles, making it a valuable addition to literature on medicinal plants. The journal is successfully navigating the challenges, poised to fulfil its mission.

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Conflict of interest

The author declares no conflicts of interest relevant to this article.

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Biography

Dr. Priya Sundarrajan is currently Professor, Department of Life Science and Biochemistry at St. Xavier's College, Mumbai, Maharashtra, India. Born on April 10, 1969, Dr. Sundarrajan brings to the academic realm an extensive experience of over 23 years, specializing in fields like Genetics, Molecular Biology and Biotechnology. Her educational background includes a B.Sc. in Botany with distinction and first rank from the University of Madras in 1990, M.Sc. in Plant Science with similar accolades in 1992, and a Ph.D. in Genetics from the University of Madras in 2000. Her doctoral research focused on "Biochemical and genetic studies on Mucopolysaccharidoses from South Indian population with special reference to Mucopolysacchisosis I." Throughout the course of her academic career, she has delivered more than 30 poster/oral presentations in National and International conferences, seminars and symposia including other countries like UK and Turkey. She has contributed in authoring chapters in 10 books, published 21 papers in peer-reviewed National and International journals, invited as judge for research meets, and served as a resource person for invited talks and refresher courses. Additionally, she has received 3 Mumbai University research grants and UGC Minor grant, along with three industry grants. Dr. Sundarrajan is recognized by Mumbai University for Post Graduate teaching since 2006, and is a recognized guide for M.Sc. by Research since 2013 and for Ph.D. in Life Sciences from 2017. She has guided more than 30 students for M.Sc. projects, and currently has two Ph.D. students under her guidance. She has played integral role in various academic committees, including being a member of the board of studies in Life Science at Mumbai University and the Vice Chancellor nominee for the board of studies in the Department of Biotechnology at Jai Hind College and the Department of Life Science at Sophia College. Beyond her academic pursuits, she serves as the Director of Caius Research Laboratory, St. Xavier's College, Mumbai since 2011 and as the member secretary of the Institutional Biosafety Committee appointed by the DBT, Govt. of India, since 2013. She is also engaged as a Nodal Officer for Nodal centre-virtual labs at IIT Bombay and holds the position of Associate Editor at the Journal of Phytonanotechnology and Pharmaceutical Sciences (JPPS). She is also a life member to professional bodies such as the Indian Society of Cell biology, Indian Women Scientists' Association, and the Indian Society of Immunology.