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Food as Medicine in Prophetic and Greco-Arab Traditions: Historical Perspectives and Modern Scientific Evidence

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Abstract

The idea of using food as a form of medicine has deep roots in Prophetic, Greco-Arab, and Islamic medical traditions. Those systems regarded dietary therapy as the first and most natural methods of preserving health and treating diseases. The renowned physician Al-Razi (Rhazes, 864–930) once said, “As long as you can treat with food, do not treat with medicine.”. This definitely underlined the gist of the classical Greco-Arab medical principle that prioritized diet and physical therapy without resorting to drugs or surgery. In terms of the Prophetic Medicine, food played a dual role of life- sustaining and healing. More specifically, Prophet Muhammad (Peace Be Upon Him) recommended several diets, including honey, olive oil, dates, black seeds, barley, and camel milk for their preventive and healthy features. Recent advances in nutrition research and biomedical research provided cell biological and molecular evidence that supported many of these traditional perceptions. That is, foods rich in antioxidants, essential fatty acids, vitamins, and other bioactive compounds have shown to improve immune function and reduce the risk of chronic conditions, such as cardiovascular disease, diabetes, cancer, and age-related ailments. This study outlined the historical background and traditional uses of some selected wild edible Arab and Islamic plants and foods highlighted in the Prophetic Medicine, and discussed their pharmacological actions in light of the current scientific understanding. Furthermore, it aimed to bridge the gap between traditional and modern biomedical perspectives on maintaining health and preventing diseases through diet.

Keywords: Diet therapy, Prophetic medicine, Arab medicinal plants. Antioxidant, Anti-microbial, Anti-inflammatory.

1. Introduction

Chronic diseases remain among the most serious public health challenges of the twenty-first century. A growing body of evidence links plant-based diets and medicinal herbs to improved health outcomes and a lower risk of metabolic and chronic disorders, including obesity, cardiovascular disease, diabetes, and certain cancers [1]. Such diets are typically low in saturated fats yet rich in fiber, antioxidants, active compounds, and vitamins. They also contain whole grains, legumes, nuts, and soy-based proteins, foods that have been consistently associated with reduced risk of chronic diseases [2, 3].

Over the past five decades, epidemiological evidence has constantly shown that people who consume bigger amounts of olive oil, fruits and vegetables tend to experience fewer cardiovascular events, cancers, and metabolic complications [4]. These protective effects are attributed largely to the combined action of dietary fiber, polyphenols (natural antioxidants), and a broad spectrum of bioactive phytochemicals present in natural products. Many of these compounds act as antioxidants and influence key metabolic pathways and regulate immune activity. Because proper immune function protects against infections and cancers, it is central to maintaining health. Unfortunately, immune capacity can decline with age, stress, poor nutrition, and other lifestyle factors. Incorporating foods with immune-modulating properties into the diet is therefore considered an effective strategy to preserve immune functions and prevent disease [5, 6].

People in Mediterranean regions generally have lower rates of cardiovascular diseases compared with populations in Northern Europe and North America [7, 8]. The traditional Mediterranean diet, abundant in fruits, vegetables, wild herbs, bread, nuts, seeds, and olive oil, is recognized as one of the healthiest dietary patterns in the world. Its richness in carotenoids, vitamin C, tocopherols, α -linolenic acid, and essential minerals, together with numerous non-nutrient components such as polyphenols, anthocyanins, and dietary fiber, contribute to its protective effects [7, 8, 9, 10]. Dietary fiber encompasses a variety of soluble and insoluble components that exert different physiological functions. That is to say, soluble fiber slows digestion and nutrient absorption, helping to prolong satiety and stabilize blood glucose and lipid levels, whereas insoluble fiber accelerates intestinal transit and enhances carbohydrate metabolism [11, 12]. Both types appear to influence body weight through their effects on gut hormones that regulate appetite and energy balance. Ghrelin, a peptide primarily secreted by the stomach, stimulates appetite and food intake; its levels rise during fasting and fall after meals. Animal studies indicate that elevated ghrelin promotes weight gain by enhancing hunger and reducing fat oxidation, shifting metabolism toward carbohydrate use [11, 12, 13, 14].

Studies containing migrant populations suggested that the lower rates of chronic disease seen in Mediterranean societies are mainly attributable to diet and lifestyle rather than genetic background. For example, comparisons between indigenous Arab and immigrant Jewish populations in Israel revealed that differences in the rate of incidence of cancer were largely linked to dietary habits [15, 16]. Nutritional factors can thus act as either risk or protective elements depending on their composition and balance. In many Arab communities, olive oil serves as the primary source of dietary fat [17]. Among Bedouin tribes, for instance, traditional diets are centered on olive oil, milk, wild plants, and wheat bread, with a low overall fat intake. Such dietary patterns provide sufficient essential fatty acids like linoleic and linolenic acids while keeping total fat consumption modest [15, 16].

1.1 Historical Background

The use of natural products (e.g., medicinal plants, camel milk, and honey) for healing represented one of the oldest medicinal practices known to humankind. Long before the emergence of modern pharmacological medicine, physicians and healers in ancient civilizations recognized that natural products played a central role in maintaining health and restoring balance. Similar to the Greek, Persian, and Ayurvedic traditions, pre-Islamic medicine viewed dietary regulation as fundamental to disease prevention and treatment [17]. Within the Islamic worldview, however, food acquired an even deeper meaning—it was not only a physiological necessity but also a matter of spiritual and moral discipline [17]. The Holy Qur'an outlines a complete framework of dietary guidance for believers, permitting (halal) most foods while forbidding (haram) those explicitly prohibited by divine command. As the Islamic empire rapidly expanded from the Arabian Peninsula to Persia, Egypt, the Maghreb, and the Iberian Peninsula, Arab and Muslim scholars encountered a notable range of medical and food customs. This exchange of ideas and

produced a distinctive Islamic approach to dietary therapy that harmonised Qur'anic principles, pre-Islamic medical knowledge, and Greek philosophical concepts [1, 17].

Prophetic sayings (Hadiths) further lighten the spiritual and therapeutic dimensions of food in Prophetic medicine and in Arab and Islamic medicine. Prophet Muhammad (Peace Be Upon Him) emphasized certain foods—such as dates, honey, olive oil, and black seeds—for their health beneficial effects. He stated, “Eat olive oil and massage it over your bodies, for it is from a blessed (mubarak) tree,” and described black seed (*Nigella sativa*) as “a cure for every disease except death.” Dates occupy a particularly valued place in Islamic tradition, being mentioned twenty times in the Qur'an. The Prophet also advised: “*If anyone of you is fasting, let him break his fast with dates; and if he does not have them, then with water, for water is a purifier.*” [18].

Both the Qur'an and the Hadith contain numerous references to natural products-based foods derived from plants and animals—among them dates, black seeds, olive oil and leaves, honey, and camel milk [1, 17]. These foods formed the foundation of the Prophet's daily diet and were employed for both nourishment and healing. Over time, they became essential parts of the *Prophetic Medicine (Al-Tibb al-Nabawi)*, a comprehensive system that combined preventive care, therapeutic practice, and spiritual guidance based on the teachings of the Prophet Muhammad (Peace Be Upon Him).

Two of the Prophet's Hadiths — “*The one who sent down the disease sent down the remedy*” and “*For every disease, Allah has given a cure*”—became guiding principles that inspired generations of Muslim physicians and scholars to seek remedies for all illnesses [17, 18]. These teachings strongly influenced the evolution of Greco-Arab and Islamic medicine during the Golden Age of the Arab-Islamic civilisation (7th–15th centuries CE). This period was marked by flourishing scientific, cultural, and philosophical activity that stretched from Andalusia and North Africa to Central Asia and India. The principal centres of medical scholarship—Egypt, Bilad al-Sham (Greater Syria), and Baghdad—played pivotal roles in shaping the advancement of medical knowledge [17, 18].

The Book of Medicine (*Kitab al-Tibb*) found in *Sahih al-Bukhari* (810–870 CE) is considered one of the most authoritative collections of the Prophet's Hadiths and practices. The interpretation and scope of the Prophetic Medicine were later elaborated by leading scholars, such as Ibn Hajar al-‘Asqalani (d. 1449) and Abu Muhammad al-‘Ayni (d. 1452). Living during the height of Arab-Islamic intellectual achievement, these scholars contextualized the Prophetic Medicine not merely as a reflection of early Islamic life but as a timeless framework applicable to their own era, integrating moral, medical, and philosophical insights [17, 18].

The Prophetic Medicine is different from purely empirical medical traditions. Rather than relying exclusively on experimentation, it draws upon divine inspiration and the accumulated wisdom of earlier civilizations. One Hadith highlights the centrality of nutrition to well-being: *“The stomach is the central basin of the body, and the veins are connected to it. When the stomach is healthy, the veins convey health; when it is diseased, they transmit disease.”* This saying encapsulates the holistic view of health deeply rooted in early Islamic thought.

In his practice, Prophet Muhammad (Peace Be Upon Him) often prescribed foods rather than complex herbal mixtures or animal-based substances. His advice included simple yet powerful natural remedies—barley soup for weakness, honey for various ailments, and camel milk for vitality [17, 18]. Dietary adjustments were frequently advised as preventive and therapeutic strategies, reflecting an understanding that food itself is among humanity’s most ancient forms of medicine. Among his favorite foods—honey, camel’s milk, dates, olive oil, and black seeds—each possessed unique therapeutic and symbolic importance. The Prophet repeated endorsement of olive oil and black seeds, as noted earlier, reflected his recognition of their exceptional curative power [17, 18].

The following subsections emphasize these natural products that were extensively studied in modern biomedical research and remained central to traditional medical practice in many Islamic cultures [19, 20, 21].

2. Traditional and Pharmacological Properties of the Prophetic Medicine-Based Diet

Honey: Honey, a natural product produced by bees from floral nectar, contains a complex mixture of nutritional and medicinal substances—many of which yet remain to be fully identified [22]. Its chemical composition depends heavily on its botanical origin, with sugar forming about 95% of its dry weight. In addition, honey includes organic acids, amino acids, proteins, polyphenols, vitamins, minerals, and aromatic compounds [22].

In the Arab-Islamic medicine, as in other traditional medical systems, honey is valued both as nourishment and as a curative agent—particularly for wound care [1, 23]. The Holy Qur’an explicitly acknowledges its therapeutic qualities: “And thy Lord has inspired the Bees, to build their hives in hills, on trees and in man’s habitations. From within their bodies comes a drink of varying colours, wherein is healing for mankind. Verily in this is a Sign for those who give thought.” (An-Nahl-68). Islamic scholars, such as Al-Razi (Rhazes, AD 864–932) and Ibn Sina (Avicenna) praised honey’s medicinal virtues in their seminal works. In Al-Hawi (The Comprehensive Book on Medicine), Al-Razi recommended the use of honey ointments for skin disorders and nerve injuries and recommended honey water for bladder wounds [1, 17, 23]. He stated: “Honey is the best treatment for the gums. To keep the teeth healthy mix honey with vinegar and use as a mouthwash daily... Honey does not spoil and could also be used to preserve cadavers.” Similarly, Ibn Sina stated in The Canon of Medicine: “Honey is good for prolonging life, preserving activity in old age... If you are above the age of 45, eat honey regularly, especially mixed with chestnut powder.” He further recommended honey for wound healing, tuberculosis, and insomnia [17, 23].

Over the last four decades, extensive research has confirmed honey’s efficacy in treating wounds, burns, and infections. Its antimicrobial, anti-inflammatory, and immunomodulatory properties were well documented, leading to renewed clinical interest in honey-based therapeutics [22, 23, 24, 25, 26]. Manuka honey, derived from *Leptospermum* species in New Zealand and Australia, exhibited strong antibacterial effects independent of

hydrogen peroxide. Therapeutic-grade honeys such as Medi-honey and Active Manuka Honey have been approved for medical use [17, 23].

Honey's antimicrobial mechanism differs from that of conventional antibiotics. It dehydrates bacteria through its hygroscopic properties, inhibits microbial growth via osmotic pressure and acidity, and maintains antibacterial potency even when diluted. Studies show inhibitory activity against over 60 bacterial species and several fungi, including *Aspergillus* and *Penicillium* [22, 23, 27]. Furthermore, the antibacterial potency of honey may vary up to 100-fold depending on floral origin and processing. Laboratory analyses confirm that *Staphylococcus aureus* is among the most sensitive pathogens to honey's antimicrobial effects [22, 24]. Experimental and clinical research indicated that honey enhances wound healing and tissue regeneration in burns and ulcers [28]. Its antioxidant activity also contributes to reducing oxidative stress. Honey's antioxidant enzymes and compounds such as ascorbic acid, flavonoids, and phenolic acids exhibit strong radical-scavenging activity. A direct correlation exists between honey's phenolic content and its antioxidant potential, as shown in oxygen radical absorbance capacity (ORAC) studies [29, 30]. In recent studies [31, 32], the physicochemical characteristics, polyphenolic composition, antioxidant potential, antibacterial activity, and wound healing effects of Palestinian alfalfa honey avocado honey were evaluated. Results obtained revealed that both honeys exhibit potent antioxidant, anti-inflammatory, antibacterial, and wound healing properties. Both honeys are high ellagic acid content, dose-dependent effects on keratinocyte proliferation, and broad antibacterial activity highlight its potential as a natural therapeutic agent in wound management. Furthermore, Molecular Docking Analysis revealed strong binding of key compounds to targets mediating antioxidant, antibacterial, and anti-inflammatory effects.

Camel Milk: Milk generally contains proteins and peptides vital for immune defense and growth. These include lactoferrin, casein, glycomacropeptide, α -lactalbumin, and lysozyme—each demonstrating antimicrobial, antiviral, anticancer, and immunostimulatory activities [33, 34]. Camel milk, however, possesses a unique nutritional and medicinal profile distinct from that of other ruminant milks. It is lower in cholesterol and sugar yet higher in essential minerals (Na, K, Fe, Cu, Zn, Mg), vitamins (A, B2, C, E), and insulin. It is hypoallergenic, suitable for lactose-intolerant individuals, and beneficial for immune-compromised patients. Traditionally, camel milk and butter have been used in Saharan and Bedouin medicine for both therapeutic and cosmetic purposes. In India, camel milk is used to manage conditions such as jaundice, spleen disorders, asthma, tuberculosis, anemia, piles, and diabetes. Clinical trials have demonstrated a 30–35% reduction in insulin requirements among type 1 diabetic patients consuming raw camel milk [33, 34].

Prophet Muhammad (Peace Be Upon Him) endorsed camel milk and urine for their medicinal value, permitting their use when necessary for treatment. Bedouins have long relied on camel milk to address disorders including osteoporosis, hepatitis, respiratory infections, and metabolic conditions [35, 36].

Olive Oil: The olive tree (*Olea europaea*), native to the Mediterranean basin, is one of humanity's oldest cultivated plants. Archaeological evidence dated olive cultivation back to 39,000 years ago on the Aegean island of Santorini and to 12,000 B.C. in the Sahara Desert [37, 38]. Qur'anic texts reference the olive tree's sanctity and healing properties: "The fruit thereof shall be for meat and the leaf thereof for medicine." "God is the light of the heavens and the earth... lit by a blessed olive tree, neither Eastern nor Western, whose oil almost glows, even without fire touching it—light upon light." (An Nur 35). The Prophet Muhammad (Peace Be Upon Him) advised: "Eat olive oil and massage it over your bodies since it is a holy (mubarak) tree," and stated that it "cures seventy diseases" [17, 23].

Olive oil, a cornerstone of the Mediterranean diet, is increasingly recognized not only for its cardiovascular benefits but also for its potential role in cancer prevention and therapy. Among its bioactive constituents, several phenolic compounds—tyrosol, hydroxytyrosol, oleuropein, oleacein, and oleocanthal—have demonstrated promising anticancer activities in various experimental models. These compounds act synergistically through diverse mechanisms, including antioxidant, anti-inflammatory, and immunomodulatory effects, as well as modulation of cell proliferation, apoptosis, angiogenesis, and metastasis. Notably, oleocanthal selectively induces cancer cell death via lysosomal membrane permeabilization, while hydroxytyrosol and oleuropein exhibit potent radical-scavenging and anti-proliferative properties. Olive oil's cardioprotective effects are attributed largely to its MUFA and phenolic constituents. These compounds exhibit antioxidant, anti-inflammatory, antithrombotic, and vasodilatory effects, improving lipid profiles and reducing oxidative stress [38]. Phenolic compounds in virgin olive oil—such as hydroxytyrosol, tyrosol, and oleuropein—protect endothelial function, enhance nitric oxide production, and suppress platelet aggregation. They also upregulate antioxidant enzymes such as glutathione peroxidase. In vivo studies confirm that olive phenolics delay atherosclerosis progression in animal models [39]. While oleic acid contributes to these benefits, evidence suggested that phenolic compounds played an equally vital role. Thus, olive oils rich in phenolics—typically virgin or extra virgin—offer superior protective effects, though their stronger flavor may not appeal to all consumers. These oils should be integrated into a balanced and enjoyable dietary pattern [39].

Olive polyphenols exhibit antimicrobial activity against intestinal and respiratory pathogens, including *Helicobacter pylori*, *Escherichia coli*, *Listeria monocytogenes*, and *Salmonella enteritidis*. This bioactivity may contribute to olive oil's preventive effects on gastrointestinal and infectious diseases [39].

Dates (*Phoenix dactylifera*): The date palm (*Phoenix dactylifera*) is considered one of humanity's earliest cultivated fruit trees. Its fruit, the date, is rich in carbohydrates—primarily glucose and fructose—comprising 44–88% of its total composition, which makes it an excellent source of quick energy. A 100-gram serving of date flesh provides approximately 314 kcal. Besides sugars, dates contain proteins, fats, essential minerals, vitamins, and about 8 g of dietary fibre per 100 g, with insoluble fibre forming the major portion. Both the flesh and the seed include a variety of fatty acids—saturated and unsaturated. While the seed contains 14 fatty acid types, only eight occur in the flesh and in small quantities. Unsaturated fatty acids such as palmitoleic, oleic, linoleic, and linolenic acids are among the main types found [40]. Ten key minerals have been identified in dates, with selenium, copper, potassium, and magnesium being the most abundant. A 100 g portion supplies more than 15% of the recommended daily allowance of these minerals. Trace elements such as aluminum, cadmium, chloride, lead, and sulfur are also present [40]. Fluorine, known to protect teeth from decay, is another important element. Dates further contain vitamins C, A, and B-complex (B₁, B₂, and niacin), with vitamins C and the B-complex group being the most prominent. The fruit also exhibits strong antioxidant potential due to its carotenoid and phenolic contents [41, 42].

Although the precise origin of the date palm is uncertain due to its long history of cultivation, it is believed to have originated near the Persian Gulf. Its domestication dates back to ancient Mesopotamia and possibly prehistoric Egypt, with archaeological evidence of cultivation in eastern Arabia as early as 6000 BCE (Alvarez-Mon, 2006). Arab traders later disseminated the plant throughout South and Southeast Asia, North Africa, and parts of Europe such as Spain and Italy. The tree typically grows 15–25 m tall, with a trunk diameter of 20–40 cm. It may form clusters of multiple trunks or grow singly. The pinnate leaves, reaching 3–5 m in length, have spines along the

petiole and about 150 leaflets, forming a crown spread of up to 10 m. Dates have served as a staple food in Middle Eastern diets for millennia [43].

In the Islamic tradition, dates hold religious and cultural significance. The fruit is mentioned around 20 times in the Quran, and Prophet Muhammad (Salallahu Alayhi Wasalim Peace Be Upon Him) is reported to have said: “If any of you is fasting, let him break his fast with dates; if he does not have them, then with water, for water is purifying.” Consequently, during Ramadan, Muslims often break their fast with dates accompanied by milk or yogurt. Dates are eaten fresh or dried, sometimes stuffed with almonds, walnuts, or marzipan, and used in both sweet and savory preparations—such as ka’ak (Arab cookies), Moroccan tajines, and puddings. They are also processed into various products, including date paste (‘Ajwa’), syrup (dibs), powder (date sugar), and spreads. Prophet Muhammad also emphasised their medicinal and protective value, saying: “Whoever takes seven ‘Ajwa dates in the morning will not be affected by magic or poison that day.” [17].

Due to their high tannin content, dates have long been used in traditional medicine as cleansing and astringent agents for digestive ailments. Preparations such as date infusions, syrups, and pastes have been used to relieve sore throats, colds, bronchial conditions, and fevers, and to mitigate alcohol intoxication. Date seed powder is also employed in some traditional remedies [17, 23]. In addition, dietary fibre in dates supports digestive health, as it consists of indigestible plant components beneficial to gut function. Health authorities recommend adequate daily fiber intake from plant-based foods. Additionally, dates’ antioxidants—particularly phenolics and carotenoids—are believed to contribute to the prevention of cardiovascular diseases, cancers, neurodegenerative disorders (e.g., Alzheimer’s and Parkinson’s), inflammation, and aging. Phenolic contents in fresh dates range around 193.7 mg/100 g, increasing to 239.5 mg/100 g in dried fruit. Their Oxygen Radical Absorbance Capacity (ORAC) averages 1656 μmol trolox/100 g in fresh dates and 1025 μmol /100 g when dried. Compared with other dried fruits (340 μmol /100 g for apricot and 3383 μmol /100 g for figs), dates are a strong antioxidant source [39, 40, 42].

Several in vitro studies have confirmed the antioxidant potential of date extracts. For example, aqueous extracts show dose-dependent inhibition of superoxide and hydroxyl radicals. In tests, 0.8 mg/mL and 2.2 mg/mL concentrations achieved 50% inhibition of superoxide and hydroxyl radicals, respectively, while complete inhibition occurred at 1.5 mg/mL and 4.0 mg/mL. Furthermore, 1.9 mg/mL extracts inhibited lipid peroxidation by 50%, and 2.3 mg/mL inhibited protein carbonyl formation by half. These results demonstrate that dates possess potent antioxidant and antimutagenic compounds [44, 45, 46]. Furthermore, date fruit extract also inhibited benzo(α)pyrene-induced mutagenicity in Salmonella strains TA-98 and TA-100, with 50% inhibition achieved at 3.6 mg/plate and 4.3 mg/plate, respectively, suggesting significant free-radical-scavenging activity [44, 45, 46].

Carob (*Ceratonia siliqua*): The carob tree (*Ceratonia siliqua*), known in Arabic as Kharob, has been cultivated for centuries for its eatable pods. Historically, the uniform weight of carob seeds inspired the term “carat,” a unit once used to measure gold and gemstones. Its nutritious pods is sometimes referred to as “St. John’s Bread.” Both pods and seeds are edible and processed for various purposes—ground seeds serve as cocoa substitutes and food stabilisers, while the pulp produces molasses (debs) and drinks, especially consumed during Ramadan [47, 48].

Carob is rich in carbohydrates, making it naturally gummy and capable of thickening and binding, particularly in the treatment of diarrhoea. It also contains about 8% protein, vitamins, tannins, and dietary fibre. Carob fibre, high in insoluble fibre and polyphenols, has been shown to lower serum cholesterol and triglyceride levels while

promoting antioxidant activity [48, 49]. Dietary fibre from carob were found to influence body weight by modulating gut hormones such as ghrelin, which controls hunger and fat metabolism [48]. Studies indicate that consuming polyphenol-rich carob fibre reduces postprandial triglycerides and free fatty acids and shifts metabolism toward greater lipid oxidation. This is also associated with decreased acylated ghrelin levels after consuming carob-enriched meals [48, 49].

Carob's tannins also show antimicrobial and antiviral activity. Clinical research carried out in Turkey assessed the efficacy of carob bean juice (CBJ) as an adjunct to oral rehydration solution (ORS) in treating childhood diarrhea. Among 80 children with acute diarrhea, those receiving ORS + CBJ experienced a 45% reduction in diarrhoea duration, 44% lower stool output, and 38% less ORS intake compared with the ORS-only group [50, 51]. No adverse metabolic effects were reported, and mild hypernatremia occurred only in the control group. These findings confirmed that CBJ was an effective and safe supplement to standard ORS treatment [50, 51].

Black seed (*Nigella sativa*): *Nigella sativa*, commonly known as black seed or Habbatul Barakah in Arabic, is a plant rich in diverse nutritional and bioactive compounds. Its seeds contain monosaccharides such as glucose, rhamnose, xylose, and arabinose, as well as a significant amount of non-starch polysaccharides, which serve as an important source of dietary fibre [52, 53]. The seeds are also abundant in fatty acids, particularly the essential and unsaturated types, including alpha-linolenic acid (omega-3) and linoleic acid (omega-6). Furthermore, *Nigella sativa* seeds provide eight of the nine essential amino acids, which, like essential fatty acids, cannot be synthesised endogenously and must therefore be obtained through diet [52, 53]. In addition to these macronutrients, black seeds contain carotene (a precursor that the liver converts into vitamin A), a nutrient known for its anticancer properties. They also contain minerals such as calcium, iron, sodium, and potassium, which, although needed only in trace amounts, play a crucial role as cofactors in enzymatic reactions. Moreover, black seeds contain active constituents such as thymoquinone, dithymoquinone, thymohydroquinone, and thymol—compounds primarily responsible for the plant's therapeutic potential [17, 52, 53].

Often referred to as black cumin or Habbatul-Barakah, the seeds were prescribed in Greco-Arab, Islamic, Indian, and Chinese traditional systems for treating a wide range of disorders, including asthma, headaches, dysentery, infections, obesity, back pain, hypertension, and gastrointestinal disturbances [17]. Prophet Muhammad (Peace Be Upon Him) was reported to have said, "The black seed can heal every disease except death." Similarly, Ibn Sina (Avicenna) 980–1037 AD, referred to the seed in his Canon of Medicine as a stimulant of energy that aids recovery from fatigue and melancholy [44, 45, 46]. Regular consumption of black seed may thus contribute to overall well-being, strengthening the immune system and promoting the body's natural ability to prevent and recover from disease [38]. In traditional Eastern Mediterranean practices, black seed has also been utilized to promote lactation. Preparations combining black seed with toasted flour, sesame, and honey are consumed to nourish both mother and infant. Its immune-boosting properties further enhance resistance to illness, while scientific studies confirm its lactogenic benefits [17].

The Prophet's statement regarding its healing potential was confirmed by plenty of scientific papers dealing with the pharmacological effects of black seeds. A Medline and Google Scholar search for "*Nigella sativa*" and "medicine" resulted in over 2,000 studies highlighting its antioxidant, anti-inflammatory, antimicrobial, hypotensive, analgesic, choleric, uricosuric, antidiabetic, antihistaminic, immunomodulatory, anticancer, and fertility effects. Both the seed oil and its bioactive constituents demonstrate broad-spectrum antimicrobial

activity—antibacterial, antifungal, antiparasitic, and antiviral—effects that are believed to be partly due to the immunomodulatory actions of its compounds [17, 52].

Common fig (*Ficus carica*): Common fig (Teen in Arabic), is a large deciduous shrub or small tree native to Southwest Asia and the Eastern Mediterranean region. The Fig has a long history of safe consumption and traditional impact. In addition to its nutritional value, the fruit has been used for its medicinal properties in Greco-Arab and Islamic medicine, as well as in Ayurvedic and Traditional Chinese Medicine systems [17]. The fig is notably mentioned in several verses of the Holy Qur'an, including a chapter named after the tree itself, highlighting its importance. The Prophet Muhammad (Peace Be Upon Him) is reported to have said: "If I had to mention a fruit that descended from paradise, I would say this is it because the paradisiacal fruits do not have pits... Eat from these fruits for they prevent hemorrhoids, piles, and help with gout." Nutritionally, figs are rich in dietary fiber, potassium, and vitamin B6. Their high fiber content supports digestive health by promoting stool bulk, thereby reducing the risk of constipation, hemorrhoids, and colon cancer [17, 54, 55].

Scientific research confirmed that different species of fig trees exhibit notable anti-inflammatory, cancer-preventive, and cancer-therapeutic effects derived from their bark, roots, leaves, fruits, and latex [56, 57]. Ancient and medieval medical texts document their use in treating carcinomas, inflammatory swellings, "hard swellings," and tumors. Historically, fig-based preparations were often applied externally, even for internal ailments such as intestinal tumors, and were frequently combined with other medicinal ingredients like blue flag (*Iris versicolor* L.), barley, and fenugreek. Both the latex and the fruits were also administered orally [56, 57].

Greek and Arabic manuscripts contain early descriptions of fig trees, and later European texts provide detailed illustrations that help identify species, primarily *Ficus carica* and *Ficus sycomorus*. These records document the use of various plant parts—including fruits (fresh or dried, at different ripening stages), bark, leaves, twigs, young shoots, and latex—for treating inflammatory and tumorous conditions. Additionally, ashes from fig trees, stalks, and lye made from the branches and wood were utilized medicinally, as was wine prepared from the fruit [54]. Although historical terminology often does not align precisely with modern diagnostic categories, the consistency and specificity of these references support the long-standing recognition of *Ficus carica* for treating inflammation and tumors. Contemporary pharmacological studies have validated these traditional uses, demonstrating both anti-neoplastic and anti-inflammatory effects of crude extracts and isolated compounds. Of particular interest are phenanthroindolizidine alkaloids and triterpenoids containing C-18 carboxylic acid groups, which show potent cytotoxic activity against several cancer cell lines and are under investigation as potential anticancer agents [58, 59]. In addition, figs contain flavonoids such as anthocyanins, phenolic compounds, and lectins with antioxidant, anti-inflammatory, and immunomodulatory effects. Sterols contribute to immune enhancement and inhibit inflammatory processes and cellular invasion while promoting apoptosis and differentiation. Moreover, coumarins exhibit selective cytotoxicity toward cancer cells and possess antioxidant and anti-inflammatory properties through inhibition of lipoxygenase-derived 5-HETE formation [58, 59].

Beyond their therapeutic promise, *Ficus carica* fruits hold significant potential in the development of functional foods and beverages. This potential arises from their favorable safety profile, pleasant taste, and rich antioxidant content [60].

The antioxidant activity of figs also contributes to reducing chronic inflammation and improving insulin sensitivity, making them valuable in functional food strategies aimed at mitigating metabolic syndrome and enhancing general wellness. In addition to these metabolic benefits, figs continue to be recognised for their

traditional roles in promoting digestive health, providing natural energy, and serving as a nutritious and accessible food source [60].

Pomegranate (*Punica granatum*): The pomegranate is a deciduous fruit-bearing shrub or small tree native to the region extending from Persia to northern India. It is now naturalized throughout the Mediterranean basin and many other parts of the world. The fruit consists of three main structural components—the seeds, juice, and peel—each possessing distinct nutritional and medicinal properties. A notable derivative, pomegranate molasses (*dibs rumman* in Arabic), is a thick, tangy syrup widely used in Middle Eastern cuisine for its characteristic flavor and health [17, 61, 62].

Pomegranate had a long-standing role in Greco-Arab and Islamic traditional medicine, where it was prescribed for ailments such as sore throat, inflammation, and rheumatism. Across the Middle East, Iran, and India, its traditional therapeutic uses also included treatment of diarrhoea, colic, and intestinal worms in children. Moreover, pomegranate was used to relieve bladder discomfort, strengthen gums, and soothe oral ulcers. Beyond its medicinal relevance, the fruit had deep symbolic importance across major world religions—including Judaism, Christianity, Islam, Buddhism, and Zoroastrianism. In the Islamic tradition, the Qur'an describes pomegranates as among the fruits that grow in the gardens of paradise [17, 61].

From a phytochemical standpoint, pomegranate juice is rich in polyphenolic compounds, particularly hydrolyzable tannins known as punicalagins, which are recognised for their strong antioxidant activity. These compounds are bioavailable and contribute to the fruit's dietary and pharmacological value. Additional bioactive constituents include beta-carotene, catechins, gallo catechins, and various anthocyanins such as prodelphinidins, delphinidin, cyanidin, and pelargonidin. The fruit also provides vitamin C at a concentration of approximately 0.47 mg per 100 g [61]. In addition, pomegranate and its extracts are diverse pharmacological activities. These include anti-inflammatory effects, hormone replacement support, allergy symptom management, cardiovascular protection, maintenance of oral hygiene, ophthalmic treatment, and cosmetic uses such as weight-loss soaps. Pomegranate derivatives have also been investigated as adjunct agents for enhancing the bioavailability of radioactive tracers in diagnostic imaging. [17, 61, 62]. The potent antioxidant activity of pomegranate compounds helps regulate inflammatory pathways, thereby reducing oxidative stress and inflammation-related damage. This mechanism is supposed to underlie the fruit's chemo preventive and chemotherapeutic potential against certain cancers [61, 62, 63, 64].

Garlic (*Allium sativum* L.): Garlic, along with onion (*Allium cepa* L.), is ranked among the oldest cultivated plants known for both culinary and medicinal uses. Garlic has been appreciated for its therapeutic potential for millennia [65, 66]. Ancient Sanskrit texts mentioned its medicinal applications as early as 5,000 years ago, and it was a component of Chinese medicine for at least 3,000 years. Civilizations such as the Egyptians, Babylonians, Greeks, and Romans also used garlic for its healing properties. In 1858, Louis Pasteur first documented garlic's antibacterial effects, and it was subsequently used as an antiseptic during World War I and World War II to prevent gangrene. Across various cultures, garlic was traditionally used to manage hypertension, and [65, 66]. Both, garlic and onion are both rich in bioactive compounds, key components of the Mediterranean diet, and are widely recognized for their role in preventing and treating several diseases. These include cancer, coronary heart disease, obesity, hypercholesterolemia, type 2 diabetes, hypertension, cataracts, and several gastrointestinal disorders (e.g., colic pain, flatulence, and dyspepsia). The pharmacological activity of garlic is primarily attributed to thiosulfates, sulfur-containing compounds, of which allicin is the most prominent. Allicin

is produced enzymatically when alliin, a sulfur-rich amino acid, reacts with the enzyme alliinase during chopping, crushing, or chewing of raw garlic. The antimicrobial, hypolipidemic, antioxidant, and antithrombotic effects associated with garlic are largely linked to allicin and its various breakdown products [67, 68]. In addition, both garlic and onion contain more polar phenolic and steroidal compounds, often found in glycosylated forms, that exhibit significant therapeutic properties. These compounds are advantageous compared to thiosulfates because they are non-pungent and more stable when exposed to heat, making them suitable for consumption in cooked dishes. Contemporary research has increasingly focused on these stable, health-promoting constituents and their potential applications in disease prevention and management [67, 68].

Fenugreek (*Trigonella foenum-graecum* L): Fenugreek, is a leguminous plant widely cultivated in India, North Africa, and the Mediterranean region. The seeds of fenugreek are particularly rich in bioactive compounds, including galactomannans, proteins rich in lysine and tryptophan, lipids, and pyridine-type alkaloids such as trigonelline, choline, gentianine, and carpaine. Additionally, the seeds contain flavonoids (apigenin, luteolin, orientin, quercetin, vitexin, and isovitexin), free amino acids, minerals such as calcium and iron, saponins, and glycosides that yield steroidal saponinins upon hydrolysis, including diosgenin, yamogenin, tigogenin, and neotigogenin. Other notable constituents are cholesterol, sitosterol, vitamins A, B1, and C, nicotinic acid, and volatile oils [69].

The medicinal properties of fenugreek reside mainly in its seeds, which were used for centuries in Greco-Arab and Islamic medicine, as well as in Indian and Chinese traditional systems. The Prophet Muhammad (Peace Be Upon Him) and generations of herbalists highly valued this plant for its therapeutic effects. One Hadith recounts that when the Prophet visited his companion Sa'ad bin Abi Waqqas during an illness, he instructed that the patient be given a soup made from dates and fenugreek, declaring that it would aid his recovery. In another Hadith, the Prophet stated, "If my community knew the benefits of fenugreek, they would value it as highly as gold." [17].

Fenugreek seeds, when crushed or powdered, have long been used externally as poultices to treat boils, ulcers, eczema, and hives, while internally they are used to reduce blood sugar, promote lactation, and treat a wide range of ailments such as pellagra, loss of appetite, indigestion, bronchitis, fever, hernia, vomiting, respiratory tract catarrh, and gastric ulcers. Additionally, fenugreek is traditionally believed to enhance female breast development and regulate hormonal imbalances [70, 71]. Furthermore, according to the German Commission E, fenugreek seeds possess secretolytic (anti-mucous) and mild antiseptic properties. Similarly, the British Herbal Pharmacopoeia identifies their hypoglycemic activity. Empirical evidence supports these claims: adults consuming half a teaspoon of fenugreek seeds with water three times daily often experience rapid and notable relief of symptoms. Experimental and clinical studies have further demonstrated the antidiabetic, anti-inflammatory, and antitumor properties of the seeds, including significant hypoglycemic effects in patients with type 1 diabetes [72, 73, 74]. Although clinical studies on fenugreek use in type 2 diabetes remain limited and of generally lower methodological quality, results consistently indicate beneficial outcomes. Most studies, though small and uncontrolled, report improvements in glycemic control with the inclusion of fenugreek seed powder in daily meals such as unleavened bread. One randomized crossover study involving healthy volunteers (n = 38) compared various seed preparations, including raw whole seeds, extracted powders, gum isolates, and cooked seeds. All forms produced reductions in postprandial glucose levels. Other trials following patients for up to six months have similarly demonstrated sustained improvements in blood glucose management without any reported adverse effects [72, 73, 75, 76].

3. Concluding Remarks

The merging of Prophetic, Greco-Arab, and Islamic medical traditions with contemporary medicine and nutritional science highlights an enduring reality. In addition, the historical focus on balance in diet and the healing properties of natural foods is well-supported by current biological and medical studies. More importantly, foods, like honey, olive oil, dates, black seeds, and diverse wild edible plants, are now approved for their abundant antioxidants, essential fatty acids, vitamins, and bioactive substances that support immune regulation, metabolic equilibrium, and disease prevention.

Current scientific investigations are revealing the cell biological, biochemical, and molecular pathways through which diet-derived active compounds promote health, offering evidence for dietary principles established centuries ago by physicians such as Al-Razi, Ibn Sina, and Ibn Albaitar echoed from the Prophetic teachings.

With chronic illnesses placing growing pressure on healthcare systems globally, there is a revived recognition of food-focused preventive approaches that provide a sustainable, culturally relevant, and scientifically supported way ahead. Combining knowledge from traditional Arab-Islamic medicine with modern nutritional science can enhance contemporary healthcare methods, linking historical wisdom with present advancements. In the end, acknowledging and utilizing the healing power of food could be crucial in reinstating a comprehensive perspective on health—one that integrates body, mind, and spirit through equilibrium, moderation, and organic sustenance.

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Ethical consideration

This study adhered to the principles of the Declaration of Helsinki.

Consent to participate

Not applicable

Conflicts of interest

The author (Prof. Bashar Saad) is a member of the Editorial Board for the AAUP Journal of STEM and Health Sciences. To maintain a transparent and unbiased peer-review process, Prof. Saad was not involved in the selection of reviewers or any editorial decisions regarding this manuscript. The peer-review process was handled independently by other editors of the journal. Otherwise, the authors have no conflicts of interest to declare that are relevant to the content of this article.

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