

BOTANICAL EMISSARIES: UNVEILING THE SIGNIFICANCE OF POLYPHENOLIC COMPOUNDS IN MEDICINAL PLANTS**Ismayilova Z.***Lecturer of the Nakhchivan State University
Nakhchivan, Azerbaijan*<https://doi.org/10.5281/zenodo.10246720>**Abstract**

Polyphenolic compounds, constituting natural entities, wield substantive efficacy in treating diverse maladies. Notably, these compounds, as present in plants, manifest a non-toxic profile, endowing phytoextracts with discernible biological properties. Common dietary constituents, rich in polyphenols, exhibit noteworthy antiseptic and antioxidant attributes, conferring consequential health benefits. Particularly, the application of fig milk emerges as a potent remedy for cutaneous afflictions such as papillomas and warts, demonstrating exceptional effectiveness. Further, the antioxidant-rich nature of olives, apples, peanuts, and red grape skins underscores their role in averting the formation of deleterious free radicals. The incorporation of such elements in daily dietary practices holds promise in mitigating the prevalence of cardiovascular diseases. This discourse accentuates the pivotal role of polyphenolic compounds derived from diverse botanical sources, providing a scholarly perspective on their therapeutic potential and affirming their relevance in the broader context of health and wellness.

Keywords: Polyphenols, Papilloma, Antioxidant, Antiseptic, Anti-Inflammatory.

Phenolic compounds present in botanical sources find application in the synthesis of various medicinal substances. Chemically, industrial utilization of phenols is fraught with toxicity. These compounds pose a considerable risk to living organisms, exerting deleterious effects on red blood cells and inducing damage to the liver and kidneys. Conversely, plant compositions often feature polyphenolic compounds or biophenols, which assume significance among health-beneficial organic compounds due to their incorporation of multiple phenolic entities. The extant array of polyphenol compounds surpasses 8000 in number. In stark contrast to their chemically derived counterparts, natural phenols in plants confer substantial health benefits to humans owing to their intrinsic antioxidant properties. Biophenols, characterized by their biological activity, actively participate in a myriad of physiological processes.

Phenol-laden plants, distinguished by heightened antiseptic and antioxidant attributes, have long commanded attention in alternative medicine. Some are extensively employed due to the olfactory appeal emanating from the essential oils they harbor. Topical applications of phyto remedies, derived from phenolic compounds, predominantly manifest antiseptic and antioxidant effects. Through the regulation of free radicals within the body, these formulations mitigate potential harmful effects, thereby finding application in the realms of malignant tumors and cardiovascular diseases. The escalating incidence of infectious diseases necessitates the utilization of polyphenol-rich plants as a shield against deleterious effects. The antibacterial efficacy of these compounds serves to eradicate disease-causing microbes, reinforcing the body's defense mechanisms. Examples of polyphenol-rich plants encompass milk of figs, hawthorn fruits, grapefruit fruits, coniferous tree leaves, wormwood, onion peel, apple skins, red grape skins, and dates [1;2].

Figs, among the cadre of polyphenolic-laden plants, have historically been employed for the treat-

ment of warts and various dermal afflictions. The remedial efficacy of fig milk, acting as a natural salve, is predominantly harnessed through external applications. The therapeutic value of freshly obtained milk from both fruit and leaves expeditiously manifests positive effects. The inherent phenolic compounds within the milk exhibit microbicidal effects attributable to their cauterizing and antiseptic properties, rendering them pertinent in dermatological and oral oncology. Immediate application of fig milk to insect bites neutralizes venomous effects, substantiating its efficacy against parasites in the intestines and ear canal. Given the potential irritant nature of phenol, caution dictates dilution with water before application, mitigating the risk of burns. In cosmetic formulations, fig milk augments the composition of creams and masks employed for wrinkle mitigation. Integration of a few drops of fig milk into shampoos not only forestalls seborrhea but also fortifies hair roots [5].

The wormwood plant, endowed with a diverse array of chemical constituents, serves as a valuable resource in the treatment of various maladies, prompting ongoing research endeavors. The therapeutic impact of wormwood is contingent upon the distinct biological activities exhibited by its individual constituents. The identification of phenolic compounds within wormwood has facilitated its application in the management of cholera. Leveraging its antiseptic properties, a minute quantity of wormwood broth is incorporated into the broth of select meat products during storage, thereby conferring enduring stability to their composition. Notably, the phenol present in wormwood has recently been ascertained to exhibit therapeutic efficacy in the treatment of malignant tumors. Decoctions thereof have demonstrated a noteworthy reduction in tumor size among patients, substantiated through repeated clinical evaluations. Remarkably, owing to its absence of adverse effects, wormwood can be applied in the treatment regimens across the spectrum of malignancies.

The olive plant, with historical recognition for its therapeutic applications, has been employed since antiquity. Utilizing its fruits in their natural state contributes to the treatment of diverse ailments. The incorporation of polyphenolic compounds within its oils renders the daily consumption of one tablespoon instrumental in thwarting the development of malignant tumors.

The medicinal value inherent in numerous coniferous species often goes unrecognized. Essential oils, particularly prevalent in the leaves of coniferous trees, boast an abundance of simple phenolic compounds, leading to their inclusion in various herbal formulations. Biologically active substances derived from coniferous leaves, stems, and cones hold significant relevance for human health, with black pine being particularly notable in this regard. Oils and ointments extracted from these arboreal sources, replete with phenolic compounds, exhibit both antiseptic and anti-inflammatory properties. Owing to the phytoncide-rich nature of conifers, baths derived from these botanicals find application in the alleviation of uterine diseases, imparting antimicrobial effects against pathogenic microorganisms, fungi, and parasites [3].

Onions, recognized for their salubrious properties, contribute to the treatment and prevention of various ailments due to the presence of phytoncides. Notably, the utility extends beyond the onion bulb itself to encompass its peels. The antioxidant and flavonoid content within onion peels engenders anti-inflammatory, antiseptic, and immunostimulatory effects. This botanical resource assumes significance in averting malignant tumors, a pervasive health concern. The phenolic compounds housed in onion skins are enlisted to mitigate cardiovascular diseases by preventing blockages, reducing cholesterol levels, and enhancing blood vessel elasticity. In sum, the preventive utilization of boiled white onion peel, in the form of a daily cup, constitutes a pivotal measure for overall health maintenance, particularly with respect to cardiovascular well-being.

The infusion derived from apple peels, distinguished by its richness in polyphenols and flavonoids, imparts an antioxidant effect, mitigates the deleterious impact of free radicals, and facilitates the elimination of toxins from the organism. Prolonged consumption of substantial quantities of freshly cleansed apple peels has been associated with nausea, a phenomenon ascribed to the inherent polyphenolic content [4]. The salutary attributes of green tea, a commonplace household beverage, find explication in the presence of biophenolic compounds within its composition. By preemptively impeding the generation of free radicals, green tea inhibits the proliferation of malignant cells, expels deleterious substances from the hepatic and renal systems, augments the body's resilience, and enhances overall vitality. However, it is imperative to consider that protracted ingestion of tea or any ingestible harboring phenolic compounds may precipitate adverse consequences, potentially leading to hepatic and renal parenchymal impairments.

Polyphenolic compounds are inherent in the skins of red grapes and the reddish-brown integument of ha-

zelnuts. Their antioxidative efficacy forestalls premature aging and exerts antimicrobial effects within the oral cavity.

Plants employed in the therapeutic domain for various ailments exhibit divergence based on the spectrum of biologically active constituents they embody. Remarkably, plants housing phenolic compounds are prominently featured as ubiquitous and notably efficacious phyto remedies in alternative medicine, lauded for their dual antiseptic and anti-inflammatory attributes.

In conclusion, the diverse array of plants discussed herein, rich in polyphenols and flavonoids, emerges as a pivotal domain in medicinal research. From the antioxidant prowess of apple peel tea to the preventive properties of green tea against malignancy, and the antimicrobial effects of grape and hazelnut skins, these botanical sources offer multifaceted health benefits. However, cautious consideration of potential adverse effects with prolonged phenolic compound intake is imperative. Understanding the distinctive biologically active constituents in therapeutic plants underscores their significance in alternative medicine, presenting promising avenues for further exploration and application in holistic health practices.

In culmination, the comprehensive exploration of polyphenolic compounds within diverse botanical sources underscores their pivotal role in medicinal applications. The inherent non-toxic nature of these compounds in plants lays the foundation for the development of phytoextracts, endowing them with distinct biological properties. The ubiquity of polyphenols in everyday food items substantiates their accessibility, offering a practical avenue to harness their inherent antiseptic and antioxidant effects for sustained health benefits. Fig milk, noted for its efficacy in addressing cutaneous anomalies like papillomas and warts, stands out as an exemplar of the tangible impact of polyphenolic interventions.

Beyond the scope of dermatological applications, the antioxidant-rich attributes of olives, apples, peanuts, and red grape skins highlight their preventive role against the formation of free radicals, presenting a compelling narrative in the context of cardiovascular health. This comprehensive overview not only reaffirms the significance of polyphenols but also positions them as agents with the potential to mitigate the burden of prevalent diseases.

The academic discourse delves into the intricate interplay between polyphenolic compounds and human health, offering insights into their multifaceted therapeutic contributions. As we navigate the complexities of healthcare, the integration of polyphenol-rich dietary elements emerges as a promising strategy. This scholarly exploration serves as a foundation for further research, propelling the discourse surrounding the pivotal role of polyphenolic compounds in botanical sources and their far-reaching implications for holistic well-being. With each revelation, the importance of polyphenols becomes increasingly apparent, beckoning a future where these compounds play a central role in the evolving landscape of preventive and therapeutic interventions.

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