

Evaluation of Antioxidant and Anticancer Properties of Indigenous Herbal Teas

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Abstract

In a world increasingly inclined towards natural remedies, the spotlight on indigenous herbal teas has intensified. Beyond their soothing flavors and aromatic essence, these teas are celebrated for their potential health benefits, particularly their antioxidant and anticancer properties. As researchers delve deeper into the realm of herbal medicine, evaluating the efficacy of these teas has become paramount. In the quest for effective cancer treatments, nature has long been a source of inspiration. Indigenous herbal teas, steeped in centuries-old traditions and wisdom, have emerged as promising contenders in the fight against cancer. Beyond their comforting brews and aromatic allure, these teas harbor a treasure trove of bioactive compounds with potent anticancer properties.

Keywords: Antioxidant • Anticancer • Indigenous herbal teas • Clinical trials

Introduction

Before diving into the evaluation, it's crucial to grasp the fundamentals. Antioxidants are compounds that inhibit oxidation, thereby preventing cell damage caused by free radicals. Free radicals are unstable molecules that can wreak havoc in the body, leading to oxidative stress, inflammation and various diseases, including cancer. Antioxidants neutralize these free radicals, thereby protecting cells from damage. Similarly, the anticancer properties of certain compounds have garnered significant attention in recent years [1,2]. These compounds exhibit the ability to inhibit the growth of cancer cells, induce apoptosis (programmed cell death) and prevent the spread of cancerous tumors. Harnessing these properties holds immense promise in the prevention and treatment of cancer.

These assays involve testing the antioxidant capacity of herbal teas using chemical assays such as DPPH (2,2-diphenyl-1-picrylhydrazyl) radical scavenging assay, ABTS (2,2'-azino-bis(3-ethylbenzothiazoline-6-sulfonic acid)) assay and Ferric Reducing Antioxidant Power (FRAP) assay. Similarly, anticancer properties are evaluated by assessing the cytotoxic effects of herbal tea extracts on cancer cell lines using techniques like MTT (3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide) assay and apoptosis assays. Animal models are utilized to evaluate the efficacy of herbal teas in preventing or treating cancer. These studies involve administering herbal tea extracts to animals with induced tumors and monitoring tumor growth, metastasis and overall survival rates.

Literature Review

Clinical trials are conducted to assess the safety and efficacy of herbal teas in human subjects. These trials involve administering herbal teas to participants and monitoring parameters such as antioxidant levels, cancer biomarkers, tumor progression and overall health outcomes. Over the years, numerous studies have yielded compelling findings regarding the antioxidant

and anticancer properties of indigenous herbal teas. Many indigenous herbal teas exhibit potent antioxidant activity, attributed to their rich polyphenol content. Polyphenols such as flavonoids and catechins act as powerful antioxidants, scavenging free radicals and reducing oxidative stress. Several herbal teas have shown promising anticancer properties, inhibiting the growth and proliferation of various cancer cell lines. Compounds present in these teas, such as Epigallocatechin Gallate (EGCG) in green tea and curcumin in turmeric tea, have been extensively studied for their anticancer effects.

In some cases, the combination of different herbs in herbal teas results in synergistic effects, enhancing their antioxidant and anticancer properties. Herbal tea blends formulated with complementary ingredients offer a holistic approach to health and wellness. While the evaluation of antioxidant and anticancer properties of indigenous herbal tea has yielded promising results, there is still much to explore. Further elucidating the specific bioactive compounds responsible for the antioxidant and anticancer properties of herbal teas can facilitate targeted therapies and the development of novel treatments [3,4]. Fine-tuning the formulations of herbal tea blends to maximize their efficacy and bioavailability can enhance their therapeutic potential. Conducting large-scale clinical trials to validate the efficacy of herbal teas in preventing and treating cancer will provide valuable insights into their real-world impact on human health.

Discussion

Indigenous herbal teas owe their therapeutic prowess to a myriad of bioactive compounds, each contributing its unique arsenal against cancer cells. Among these, polyphenols steal the spotlight. Flavonoids, catechins and phenolic acids, abundant in many herbal teas, exhibit remarkable antioxidant and anticancer activities. Epigallocatechin Gallate (EGCG) found in green tea, curcumin in turmeric tea and quercetin in onion tea is just a few examples of these potent polyphenols. Central to their anticancer properties, the antioxidant capacity of herbal teas plays a pivotal role in neutralizing free radicals and mitigating oxidative stress. By scavenging Reactive Oxygen Species (ROS), herbal teas help safeguard cellular components from oxidative damage, thereby thwarting the initiation and progression of cancer. Beyond antioxidant defense, indigenous herbal teas exert multifaceted effects on cancer cells, impeding their proliferation, inducing apoptosis and thwarting angiogenesis—the process by which tumors develop blood vessels to fuel their growth.

EGCG, for instance, interferes with signaling pathways crucial for cancer cell survival, while curcumin exhibits anti-inflammatory and immunomodulatory properties, bolstering the body's defense against cancer. A wealth of scientific evidence attests to the anticancer potential of indigenous herbal teas. Epidemiological studies have highlighted the lower cancer

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Received: 01 April, 2024, Manuscript No. jpn-p-24-135002; **Editor Assigned:** 03 April, 2024, Pre QC No. P-135002; **Reviewed:** 17 April, 2024, QC No. Q-135002; **Revised:** 22 April, 2024, Manuscript No. R-135002; **Published:** 29 April, 2024, DOI: 10.37421/2472-0992.2024.10.293

incidence rates among populations with high consumption of these teas, offering compelling clues to their protective effects. In laboratory settings, herbal tea extracts have demonstrated inhibitory effects on various cancer cell lines, paving the way for further exploration and clinical translation [5,6]. While laboratory studies provide invaluable insights, the translation of these findings into clinical applications holds immense promise. Clinical trials investigating the efficacy of herbal teas in cancer prevention and adjunctive therapy are underway, shedding light on their safety, dosage and synergistic interactions with conventional treatments.

Conclusion

The evaluation of antioxidant and anticancer properties of herbal teas represents a burgeoning field of research with profound implications for human health. As our understanding of herbal medicine continues to evolve, harnessing the therapeutic potentials of these teas holds immense promise in the fight against oxidative stress, inflammation and cancer. Indigenous herbal teas offer more than just anticancer benefits—they embody a holistic approach to wellness, nurturing the body, mind and spirit. Rich in vitamins, minerals and phytonutrients, these teas bolster the body's resilience, promote detoxification and enhance overall vitality, contributing to a balanced and vibrant life. In a world inundated with synthetic pharmaceuticals, the resurgence of indigenous herbal teas heralds a return to nature's wisdom—a harmonious synergy between human health and the natural world. As we unravel the intricate tapestry of bioactive compounds and delve deeper into their therapeutic potentials, indigenous herbal teas stand poised to revolutionize cancer care, offering hope, healing and a renewed appreciation for the healing power of nature.

Acknowledgement

None.

Conflict of Interest

None.

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How to cite this article: Emmanuel, Babatunji. "Evaluation of Antioxidant and Anticancer Properties of Indigenous Herbal Teas." *J Pharmacogn Nat Prod* 10 (2024): 293.