

Chapter 7

Role of Medicinal Plants Against Cancer

Arthi Gunasekaran

Bharathiar University, India

Trisha Sathya

Bharathiar University, India

Vijaya Anand Arumugam

 <https://orcid.org/0000-0001-7485-1586>

Bharathiar University, India

Balamuralikrishnan Balasubramanian

Sejong University, South Korea

Asirvatham Alwin Robert

Prince Sultan Military Medical City, Saudi Arabia

Arun Meyyazhagan

Christ University, India

ABSTRACT

Cancer is a fatal disease where uncontrolled multiplication of cells occurs in the body. Radiation therapy, Chemotherapy, and medications are some of the procedures for treating cancer infections, but they are expensive, and the cure is ineffective. Usage of plants for the treatment of cancer can be one of the effective processes as the phytochemical compounds in these plants have the potential of alleviating various malignancies that includes cancer. The phytochemical compounds found in the plants have the medicinal properties like anti-inflammation, apoptotic, anti-oxidative to treat various disease include the cancer. The following chapter will be about the Indian medicinal plants such as Carica papaya, Glycyrrhiza glabra, Morinda citrifolia, Azadirachta indica, Psidium guajava, and Annona reticulate, in treating the cancer and its future perspectives.

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INTRODUCTION

Cancer is the most global burden and life-threatening disease and is characterized by abnormal cell proliferation or a cell death reduction, leading to apoptosis (Roy et al. 2011). It occurs by several kinds of environmental and internal factors resulting in an excess of reactive oxygen species (ROS) (Kumar et al. 2021). This oxidative stress can cause damage to Deoxyribonucleic acid (DNA) and Ribonucleic acid (RNA), including nucleic acid degradation, base mutations, chromosomal rearrangements, breaking of single- or double-strand, DNA cross-linking, and lipid peroxidation-induced damage to the integrity of the cell membrane, ultimately leading to tumour formation (Gonzalez et al. 2018). It rigorously causes an impact on the worldwide human population (WHO. 2017). It is a perilous ailment that poses significant challenges in both developing and developed nations (Roy et al. 2011). Cancer is distinguished by the aberrant rapid growth of the cells that infiltrate neighbouring tissues, ultimately leading to their death (Gennari et al. 2007). This disease poses a significant threat to life, instilling fear, and apprehension in those affected. The uncontrolled growth of these cells disrupts the delicate balance within the body, destroying vital tissues. One unique aspect of cancer is the quick formation of aberrant cells that grow beyond their normal borders and can then infect throughout the body and migrate to other organs, a process known to be metastasis. The most common reason for cancer mortality is widespread metastasis (Younis et al. 2018). The gravity of this condition necessitates urgent attention and comprehensive understanding to develop effective strategies for prevention, diagnosis, and treatment. By unravelling the intricate mechanisms underlying cancer progression, we can strive towards mitigating its devastating impacts on individuals and society (Sultana et al. 2014). The favourable effects of incorporating fruits, vegetables, and seeds into one's diet to mitigate the risk factors associated with various diseases and also documented the leaf extracts taken from different cultivated plants have distinct phytochemical profiles and biological activity (Varghese et al. 2021). Consequently, despite being commonly regarded as agricultural waste, plant leaves have been found to contain a plethora of valuable Nutra-pharmaceutical compounds (Kumar et al; 2021; Amat-ur-Rasool et al. 2020; Mannino et al. 2020; Mateos-Maces et al. 2020). This is primarily attributed to the presence of bioactive compounds within these dietary components (Sharma et al. 2017; Chen and Yen, 2007). Plants have long served as a primary reservoir of diverse bioactive compounds, contributing significantly to the field of natural medicine. Throughout history, various plant-based remedies have successfully treated numerous ailments, as evidenced by the rich heritage of folk medicine (Varalakshmi et al. 2014).

Plants have a significant role in the advancement of many traditional medicines, such as acupuncture, herbal medicine, Ayurvedic, naturopathy, Unani, Chinese medicine, and so on. These systems have contributed to the discovery and utilization of important drugs that are still in use today. In addition to these well-known systems, there are also lesser-known traditional medicine systems in Africa, Australia, Central America, and South America, among others. In the present day, the pursuit of novel molecules has adopted a distinct methodology, with the integration of the sciences of aboriginal botany and ethnopharmacology. These disciplines serve as guides for chemists, leading them towards various information and the role of compounds (Vijayakumar et al. 2018). The rich diversity of tropical flora plays a significant role in providing new leads for drug discovery in this context. This chapter is based on the utilization of plants with medicinal values and their chemical composition in the management of cancer.

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