



Natural Products and Synthetic Analogs as a Source of Antitumor Drugs

Yasaman Taheri-Abkenar¹, Javad Sharifi-Rad¹

¹Phytochemistry Research Center, Shahid Beheshti University of Medical Sciences, Tehran 1991953381, Iran

Abstract:

Cancer is not the name of only one disease; it is a group of diseases that can start at any tissue of the body with abnormal cell growth and in case of metastasis, it can be the cause of death. Cancer is a major burden of disease and a leading cause of mortality worldwide and has been highlighted as one of the issues of concern most especially for the public health system globally. The US National Cancer Institute has reported an uprise of 50% in cancer cases, which will extremely increase to 21 million new cases in approximately two decades to this period. Until now, the majority of the medications used in the treatment and management of cancer have been synthetic or semisynthetic. However, nature is a rich and safe source of anti-cancer drugs with an abundant pool of diverse chemicals and pharmacologically active compounds. For the past decade, some compounds with natural sources have been brought to light as a major source of drugs that have been developed for the management and treatment of cancer, whereas almost 70% of them have been approved in various stages of clinical trials. The complex and unusual structural configuration of some of these natural compounds plays a crucial role in their binding to specific targets, receptors or molecular interfaces. Because of the complicated structure, it is difficult to develop a synthetic compound similar to the natural product. This might result in some level of phenotypic alteration, especially in the biological system that involves fixing of natural molecules, which entails structural requirements that allow their binding to specific targets or molecular interactions.

Therefore, this research represents a view of the current trends towards the development of natural products and synthetic analogs as a new source of antitumor and anticancer drugs that have been reported for the past 10 years. Moreover, recent studies on antitumor drugs that



have been derived from various sources and their general bioactivity towards the management of different types of cancer are explained in this research.

Biography:

Dr. Yasaman Taheri is a Pharmacy student and a researcher at The Phytochemistry Research Center of Shahid Beheshti University of medical sciences and works with a research team on medicinal plants, extraction of phytochemicals, components separation, chemical analysis and pharmacology of the phytochemicals. She has finished this research on the anti-tumor effects of natural products after extensive studies and with the help of many other colleagues and finally published a paper on this subject in the MDPI publication. She continues her work on the medicinal plants to help to enhance the effectiveness of the treatment guidelines, reduce the side effects of the conventional treatments, and to improve the public health. With the help of her colleagues, they have made great progress in this matter.

Publication of speakers:

1. Sharifi-Rad, J.; Ozleyen, A.; Boyunegmez Tumer, T.; Oluwaseun Adetunji, C.; El Omari, N.; Balahbib, A.; Taheri, Y.; Bouyahya, A.; Martorell, M.; Martins, N.; C.Cho W. Natural Products and Synthetic Analogs as a Source of Antitumor Drugs. *Biomolecules* 2019, 9, 679.

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