

The Role of Natural Products in Cancer Research: Hope Revisited

Saad Sabbar Dahham*

Department of Sciences, Rustaq College of Education, Colleges of Applied Sciences (CAS), Sultanate of Oman

*Corresponding author: Saad Sabbar Dahham, Department of Sciences, Rustaq College of Education, Colleges of Applied Sciences (CAS), Sultanate of Oman, Tel: 0096895625557; E-mail: Saad.dahham.rus@cas.edu.om

Cancer is an uncontrolled growth of abnormal cells in the body. There are more than 100 types of cancer, which cause around 8 million deaths every year. Cancer cells arise from dysregulation in normal cellular mechanisms; and they are characterized by alterations in the expression of multiple genes, leading to local tissue invasion, which may eventually turn into metastasis. During carcinogenesis, cells undergo a multistep process to acquire specific characteristics that can promote cancer development, including these six essential traits: inducing proliferative signalling, escaping growth suppressors, avoiding programmed cell death, enabling replicative immortality, sustaining angiogenesis, and activating invasion and metastasis. These six key features of cancer have been recently revised to add two more hallmarks: the ability to reprogram cell metabolism to generate adequate energy, and the ability to avoid immune destruction. Malignant growths are also believed to acquire additional characteristics which enable them to promote inflammation, and genome instability [1]. That being said, we are pleased to introduce the commencement of the (Journal of Drug Research and Development) with eminent reviewers and editors in the field of cancer biology, discussing new approaches in molecular cancer therapeutics. In this issue, we hope to give rise to articles offering unique insights on the new approaches in understanding the impact of natural products on developing new anticancer agents. Over the centuries, human beings have relied on plants for basic needs such as food, clothing, shelter, transportation, hunting weapon and medicine. The empirical findings of Sumerian, Egyptian, Traditional Chinese Medicine (TCM), Ayurvedic, Traditional Arabic and Islamic Medicine (TAIM) and Western Herbalism have formed the basis of advanced traditional medicine system that have been held, and still holds, an important position in primary health care. In more recent history, the use of medicinal plants has involved the isolation of natural active compounds. This approach initiated a new field wherein drug from plants could be purified, characterized and utilized as pharmaceutical agents. A wide range of plant derived natural products have been reported to have ability to induce apoptosis in various cancer cells such as, Gallic acid, Curcumin, Capsaicin and Resveratrol [2]. Although, there are many therapeutic approaches to treating cancer, results are not fully satisfactory because the cytotoxicity of chemotherapy to solid tumors is nonspecific. Besides, selective anticancer drugs are lacking and some recurring tumors can become resistant to drugs. The capacity of a chemotherapeutic agent to target malignant cells while preserving normal cells is the brand of a promising anti-cancer drug. Thus, the discovery of really effective anticancer drugs is very important and highly challenging mission. Most recently, our research team in EMAN testing and research laboratory-USM-Malaysia and CAS in Oman had the opportunity to work on several plant extracts, pure compounds and synthetic molecules towards different cancer cells, and, what we found is that many natural products have the ability to target cancer cells selectively *via* different mechanism. For

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example, β -caryophyllene is one of the major terpene found in enormous essential oils plant. It seems to possess strong inhibitory activity against colorectal tumor growth through a mechanism that appears to involve apoptosis induction and angiogenesis suppression [3]. Taken together the multi-functional properties of β -caryophyllene which includes anticancer, antimicrobial, antioxidant and anti-inflammatory activities suggest that such molecule/s may interact with several components of tumor-inducing pathway [4]. With the potential benefits of natural products, we hope to discover and publish new compounds that may be therapeutically useful against carcinogenesis. This journal issue does not aim for a broad coverage of the wide and diverse area of natural products. Rather, we hope to stimulate our readership with a number of papers covering emerging discoveries in the field of research, and to resume fulfilling our obligation to highlight hot and promising topics.

Journal of Drug Research and Development aims to be a forum for research and review articles that employ strong and well-designed mechanistic achievable models in the field of oncology and drug discovery. We are highly acknowledging the validation data of key findings using *in vivo* model and molecular imaging. We hope that the scope of this journal highlight our commitments to publishing robust articles. Finally, we sincerely thank our authors, editors and reviewers for their insightful ideas, and hope you will be benefited from these papers.

References

1. Hanahan D, Weinberg RA (2011) Hallmarks of cancer: the next generation. *Cell* 144: 646-674.
2. Dahham SS, Hassan LE, Ahamed MB, Majid AS, Majid AM, et al. (2016) *In vivo* toxicity and antitumor activity of essential oils extract from agarwood (*Aquilaria crassna*). *BMC Complement Altern Med* 16: 236.
3. Dahham SS, Tabana YM, Iqbal MA, Ahamed MB, Ezzat MO, et al. (2015) The anticancer, antioxidant and antimicrobial properties of the sesquiterpene β -caryophyllene from the essential oil of *Aquilaria crassna*. *Molecules* 20: 11808-11829.
4. Dahham SS, Tabana YM, Ahamed MBK, Majid AMSA (2015) *In vivo* anti-inflammatory activity of β -caryophyllene, evaluated by molecular imaging. *Molecules Med Chem* 1: e1001.