

## EDITORIAL

## Natural Products: What can Nature Offer for the Promotion of Health?

“The first wealth is health.” Bearing in mind this quote from Ralph Waldo Emerson, we should think of Nature as a pool of natural products with significant nutritional and health-promoting compounds.

Historically, plants and naturally occurring substances have been invaluable to humanity, not only as food and nutrient sources but also for addressing various health issues. However, currently, a considerable number of people globally depend on plant-based remedies; therefore, the fields of traditional medicine or complementary and alternative medicine are still very active and expanding. The complex chemical structure of natural products contributes to their remarkable potential in biological systems, such as antioxidative, antimicrobial, anti-inflammatory, immunostimulant, anticancer, neuroprotective, hepatoprotective activities, etc. Hence, both medicinal plants and plant-derived natural products still play major roles in the pharmaceutical, cosmetic, and health food industries [1-3]. First of all, medicinal plants are used in the form of extracts, macerates, decoctions, essential oils, hydrolats, etc., to improve everyday life and health. Secondly, isolated bioactive compounds are used as well, and finally, organic compounds that have been synthesized based on natural compounds also exhibit significant biological activities [1]. As the usage and knowledge surrounding herbal medicines and corresponding bioactive compounds have evolved and advanced, the necessity for more effective utilization of such materials has emerged. Searching for innovative methods to employ natural products has led to the expansion of their applications at a nanoscale level. Currently, the realm of nanoscience and nanotechnology is garnering increasing interest [3, 4].

Considering the aforementioned factors, a revival in the application of plant-derived therapies and botanical health-enhancing products is currently being observed.

One of the main focuses of medicinal plants and natural product investigations nowadays is their application in the prevention and treatment of metabolic disorders, primarily Diabetes Mellitus (DM). The investigation of plant materials with antidiabetic properties has been revived due to the myriad adverse effects arising from extended use of oral hypoglycemic agents, restricted effectiveness of present-day medications, and the emergence of health-related issues correlated with uncontrolled hyperglycemia, particularly in individuals with type 2 DM [5]. Many *in vitro* and *in vivo* findings, as well as preclinical investigations and numerous clinical trials involving type 2 DM patients, have indicated that various medicinal plants, fruits, spices, and natural compounds exhibit promising capabilities in alleviating the symptoms and side effects of diabetes mellitus [2, 5].

Thus, in this special issue, Chanu *et al.* [6] have discussed natural flavonoid compounds as promising facilitators in diabetic wound management. In their review article, Chanu and coworkers have shown the potential of lead flavonoid compounds in the treatment of diabetic wounds and their mechanism of action. They list several possible ways of action in the prevention and management of diabetic wounds, such as their role in the regulation of hyperglycemia, the antioxidant activity of flavonoids, and anti-inflammatory and wound healing properties. Some examples that have been presented are of flavonoids and flavonoid glucosides, such as quercetin, hesperidin, curcumin, rutin, naringin, and luteolin, which have shown high potential in managing diabetic wounds.

Another very interesting review article in this special issue deals with the application of stem cell therapy in combination with naturopathy for the management of diabetes and associated complications [7]. Saha *et al.*, in their review article, have provided an overview of recent findings on stem cell therapies, encompassing induced pluripotent stem cells and mesenchymal stem cells. They have emerged as an increasingly prominent subject of research. The progression of stem cell therapy may offer a viable treatment alternative. Recently, some new bioactive compounds of botanical origin have exhibited antidiabetic effects with efficacy greater than oral hypoglycaemic agents. The authors have discussed the developments in regenerative medicine and stem cell treatments and the possibility that they will become a practical option for diabetic management. Conversely, medicinal plants are viewed as a more effective solution for comprehensive diabetes therapy. This review has listed a wide number of medicinal plants, with a clearly defined agent of biological action, as well as natural antidiabetic polyherbal formulated drugs.

Another health concern of great importance is the increasing frequency of cancer development. Many compounds of plant origin are the subject of research on the prevention of cancer occurrence, and the treatment of various cancers and their side effects. We have been informed about one such compound by Amini and coworkers [8]. In their review article, they pointed out a polyphenolic compound that is mostly found in grapes, resveratrol. They showed that resveratrol could potentially serve as a supplementary component in diverse cancer treatment approaches. The dual nature of its impact on both healthy and tumorous tissues is quite interesting. It has been demonstrated that resveratrol diminishes oxidative stress, DNA impairment, cellular demise, and the secretion of numerous cytokines correlated with chemo/radiotherapy adverse effects' progression. Some of the principal mechanisms of resveratrol action encompass the inhibition of pro-oxidant enzymes, stimulation of DNA repair and antioxidant defense enzymes, and mitigation of inflammatory mediators. It can provoke various cell death pathways

in cancerous cells by activating multiple mechanisms. Additionally, it enhances the immune system, thereby decreasing tumor resistance to treatment. Amini *et al.* have also highlighted certain limitations of resveratrol and ways to eliminate them.

In conclusion, we can emphasize that this special issue, which consists of three very interesting review articles, provides the latest knowledge in the field of medicinal herbs and natural products. Here, the readers have been provided with a comprehensive overview of the scientific results published so far related to the use of medicinal plants and compounds that are the products of their secondary metabolism for health promotion, particularly in therapy and the treatment of side effects of diabetes and cancer.

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