Aims & Scope:

From ancient time humankind have depended to nature in order to save and improve the life quality by supplying different requirement such as pharmaceutical compounds [1]. Therapeutic effects of natural products on different human diseases are obtained from traditional medicine, are developed and approved by a mountain of evidences in modern medicine [2]. Nowadays a great revolution has been occurred in this field resulting to introduce several natural drugs which are currently in use. Phytochemicals are plant secondary metabolites play an important role in protecting plants against biotic and abiotic stresses and generally classified into five main classes including phenolic and polyphenolic compounds, terpenoids, nitrogen-containing alkaloids, sulphur-containing compounds, and acetylenes and psoralens [3,4]. A vast number of scientific evidences obtained from preclinical and clinical experiments show the promising effect of phytochemicals on different non-communicable diseases including metabolic disorders and their related complications, cardiovascular and neurodegenerative diseases, as well as cancer. Several epidemiological studies also showed an inverse correlation between fruits and vegetables consumptions (as rich source of phytochemicals) and incidence rate of abovementioned diseases (which are main cause of two-thirds of all deaths worldwide) [3,4].

In addition to fruits and vegetables, medical plants are other well-known sources of phytochemicals. It has been estimated that more than 4 billion people across the world using herbal remedy for treatment of different types of diseases [5-7]. Nowadays traditional medicine is widespread in different parts of the world due to its lower side effects and in some cases higher efficacy than synthetic drugs [8]. The exact molecular mechanisms underlying the promising effect of phytochemicals are largely unknown. Recent evidences show the ability of these compounds to modulate different molecular pathways and target different gene as well as different transcriptional factors. These abilities of phytochemicals and their possible interaction with current drugs open a new therapeutic window for treatment of non-communicable diseases [9,10].

In spite to presence of different natural based drugs, natural product research is still in its infancy and this vast diversity has attracted the attentions of numerous scientists across the world to finding new highly effective natural compounds [11]. The main goal of this special issue is to provide in depth comprehensive review regarding to phytochemical isolation, characterization, biosynthesis, pharmacokinetic and pharmacodynamics and related area.

Keywords: Quercetin, phytochemicals, natural products, cardiovascular and neurodegenerative diseases, cancer, phytochemical isolation and biosynthesis.

Sub topics:

1. Isolation, characterization, biosynthesis of phytochemicals
2. Safety of phytochemicals
3. Use of phytochemicals in prevention of human diseases
4. Studies on the improvement of phytochemicals bioavailability
5. Molecular mechanisms underlying the promising effects of phytochemicals.

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