2. ANTI-CANCER COMPOUNDS IN BRASSICA VEGETABLES

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Introduction. Cancer is the main cause of mortality and morbidity worldwide. According to the World Cancer Research Fund an estimated 40% of all human cancers are related to diet. Although a large variety of therapeutic approaches have been developed and translated into clinical protocols, the toxic side effects of cancer treatments negatively impact patients, allowing cancer to grow. Cabbage, broccoli, Brussels sprouts, and other members of the g. Brassica have been widely regarded as potentially cancer preventative. A lower risk of colorectal, cervical, and lung cancers was found to be associated with a high intake of cruciferous vegetables. What differentiates Brassicaceae from other plants is the presence of the secondary metabolites called glucosinolates, recognized for both their role in plant defense and human health.

Aim of study. This review aims to examine the roles of Brassicaceae vegetables and their important bioactive metabolites in prevention and treatment of different cancers.

Methods and materials. In order to fulfill the purpose of the study the scientific articles (about 60) from the last decade on Google scholar, Science Direct, PubMed databases were searched by following parameters: Brassicaceae nutrients, compounds, phytochemicals; Brassicaceae in health benefits, cancer prevention and treatment and other.

Results. The family Brassicaceae genus Brassica consists of the species Brassica oleracea (e.g., broccoli, cabbage, cauliflower, Brussels sprouts, kale, turnips, collards), which are the most frequently consumed vegetables worldwide. In the last couple of decades, growing scientific evidence has suggested that consumption of cruciferous vegetables has a preventive role against a variety of human diseases. It has been demonstrated that the chemopreventive potential of cruciferous vegetables is likely due to glucosinolates and their secondary metabolites (e.g., isothiocyanates (ITCs)). In vitro and in vivo studies have shown that ITCs are able to activate phase II detoxification enzymes (such as quinone reductase and glutathione S-transferase) as well as to disrupt tubulin polymerization, inducing cell cycle arrest and the activation of apoptosis in cancer cells. Additionally, since dietary ITCs are well absorbed and have good bioavailability, these compounds are promising candidates for anti-cancer therapies.

Conclusion. The family Brassicaceae signifies to be an outstanding source of health-promoting phytochemicals and nutrients that would pay beneficial dietary importance against certain types of diseases. Numerous epidemiological studies indicate that Brassica vegetables protect humans against cancer. Thus, Brassica metabolites are emerging as new weapons for anti-cancer therapeutics.