Sweet scented geranium phytochemistry and pharmacognosy

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Introduction

Herbs have long been used in medical practice due to their therapeutic significance. Even today, the modern pharmaceutical industry depends on plant extracts and the utilization of their active compounds, which have a precise mood of action. An assessment of all US Food and Drug Administration (FDA)-approved new molecular entities (NMEs) revealed that natural products and their derivatives represent over one-third of all NMEs. Nearly 25% of these are from plants (1). Studies have shown that many plants have effects on the human body, such as antipyretic, sedative, anti-inflammatory, antioxidant, antimicrobial, and vasodilatory effects (2, 3). Additional studies of herbs and plant extracts can help to find alternatives for the management of major health problems, such as oxidative stress, diabetes mellitus, obesity, antibiotic resistance, cancer, and chronic inflammatory diseases.

Many cardiovascular diseases (CVDs), including heart failure, atherosclerosis, and ventricular remodeling, are associated with the formation of reactive oxygen species (ROS) during excessive oxidative stress. The genomic integrity of the cell is maintained by a balance between the levels of pro-oxidants and antioxidants (4). If this balance is disrupted, then host immunity is modulated, which affects the normal cellular signaling pathways, leading to uncontrolled proliferation of the cells. This can cause cancer and macrophage polarization, leading to the formation of atherogenic plaques (4, 5). Under these conditions, particularly in the tumor environment, higher basal oxidative stress is exhibited, thus taking advantage of the upregulated antioxidant system (6).