

Methods for Analysing Phytochemicals from the Genus *Gentiana*

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Abstract

In addition to providing a variety of pleasures of taste, diet provides energy and nutrition necessary for survival. Numerous studies have demonstrated that the main nutrients in a diet, like protein, carbohydrates, and fat, play a significant role in controlling aging and longevity. It is a very interesting question to see if other ingredients in food can help prevent aging and increase longevity. Based on recent research, we talked about plant ingredients that can control metabolism, target TRP channels, mitophagy, senescence pathways, and circadian rhythms, and increase longevity. The development of new intervention tools for the prevention of aging and diseases related to aging would benefit from a deeper comprehension of the specific effects and mechanisms of dietary ingredients on longevity regulation.

Keywords: Nutrients • Diseases • Inflammation

Introduction

In inflammatory disease model systems, phytochemicals are known to have anti-inflammatory effects in vitro and in vivo. An essential immune response to exogenous stimuli like infection and injury is inflammation. Chronic inflammation is associated with the continuous local or systemic release of inflammatory mediators, non-cytokine mediators like ROS and NO, and inflammatory cytokines, which are strongly implicated in the pathogenesis of various inflammatory disorders. Inflammation is a necessary host-defense mechanism. For a variety of inflammatory diseases, phytochemicals with anti-inflammatory mechanisms that reduce long-term inflammation may be therapeutic options. NF- κ B, MAPKs, STAT, and Nrf-2 signaling are just a few of the main inflammatory signaling pathways that these phytochemicals affect. We review the molecular signaling pathways altered by these anti-inflammatory phytochemicals, with a focus on transcription factor pathways, and discuss the characteristics of phytochemicals that possess anti-inflammatory activities in various chronic inflammatory diseases. In addition, we compare the human-relevant equivalent doses of several phytochemicals with current anti-inflammatory drug doses used in various types of chronic inflammatory diseases in order to evaluate the phytochemicals as drug candidates. We translate the effective doses of phytochemicals in disease models developed in mice or rats into the human-relevant equivalent [1-3].

Diabetes is a long-term physiological problem that affects people of all ages and seriously disrupts the harmony of everyday life everywhere. In spite of the fact that insulin preparations and a number of synthetic oral antidiabetic medications are available, there is a pressing need to discover and develop novel antidiabetic medications due to the development of resistance and adverse effects associated with their long-term use. On the other hand, scientists, researchers, and pharmaceutical companies all over the world are increasingly turning to plants or herbal sources to search for potential bioactive

compound(s) for the discovery and development of targeted novel antidiabetic drugs that may manage diabetes with fewer side effects than conventional antidiabetic drugs.

Methods

The potential candidates that we have identified in this review are either isolated phytochemicals or extracts containing bioactive phytoconstituents that have been demonstrated to have significant antidiabetic potential in a number of in vitro, in vivo, and clinical studies. The reported phytochemicals and/or plant extracts' mode of action has also been described to focus on potential phytochemicals and phytosources for further research into the discovery and development of novel antidiabetic therapeutics. Since ancient times, medicinal plants have been used in traditional medicines, spices, and other food components for human health. An aromatic herbaceous plant known as garlic (*Allium sativum* L.) is utilized as a traditional medicine and food all over the world. In traditional medicines, it has been reported to have anticarcinogenic, antioxidant, antidiabetic, renoprotective, anti-atherosclerotic, antibacterial, antifungal, and antihypertensive effects [4].

Discussion

Sulfur-containing phytoconstituents like alliin, allicin, ajoenes, vinyldithiins, and flavonoids like quercetin are abundant in *A. sativum*. A variety of biological properties, including antibacterial, antiviral, antifungal, antiprotazoal, antioxidant, anti-inflammatory, and anticancer properties, have been tested on *A. sativum* extracts and isolated compounds. *A. sativum* extracts' phytochemical composition, pharmacokinetics, and pharmacological activities, in addition to allicin, the plant's main active ingredient, are the subject of this review [5].

Polyalthia are evergreen trees that can be found in many tropical and subtropical regions. They are members of the Annonaceae family. *Polyalthia* species have long been used as an indigenous medicine to treat fever, diabetes, infections, digestive disorders, and other conditions. Numerous pharmacological properties, including anti-oxidant, anti-microbial, anti-tumor, and anti-cancer properties, have been demonstrated by recent research on both crude extracts and isolated pure compounds.

Conclusion

It is common knowledge that an unhealthy lifestyle, as well as dietary and environmental factors like stress, toxins, and smoking, contribute to the

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onset of cancer, which typically takes several years. In fact, substances, whether natural or synthetic, have been used as cancer chemoprevention to slow, impede, or even halt the growth of cancer. This review aims to collect phytochemicals from *Polyalthia* species that have anti-cancer potential for chemoprevention and are currently available. It also provides directions for additional research on the intriguing agents and potential clinical applications.

Acknowledgement

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Conflict of Interest

None.

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