

Grape and Wine Stilbenoids: General Characterization and Biological Activity

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Stilbenes are natural phenolic compounds. Among the identified stilbenes, resveratrol is the monomeric and most popular compound. The structural unit of stilbenes consists of two phenyl rings linked by an ethylene bridge to form a C6–C2–C6 chain. This double bond allows stilbenes to exist in the trans(E) and cis(Z) forms. Grapes and red wine are among the major dietary sources of stilbenoids for human nutrition, especially in European countries.

Stilbenoids possess a wide range of biological activities that are potentially beneficial to human health, such as neuroprotective, antioxidant, and antitumor effects.

Among the recent research directions, stilbenes have attracted considerable interest as potential anti-obesity agents. Obesity is the most common nutritional disorder worldwide. According to the World Health Organization (WHO), obesity is defined as the accumulation of abnormal or excessive fat that may affect health. Prevalence data suggest that 650 million adults were obese in 2016, representing approximately 13% of the global adult population. In grapes, stilbenoids, like other polyphenols, are mainly concentrated in the skin. The concentration of stilbenoids in grapes depends on the grape variety. Wine is an important dietary source of resveratrol, where it can be detected at concentrations of up to 20 mg/L. Red wines contain higher levels of stilbenoids than white wines.