

## Non-thermal processing effects on fruits and vegetables phytonutrients

### ABSTRACT

The health-promoting effects of many phytonutrients are attributed mainly to their antioxidant activity, although there may be other modes of action. The demand for high quality food with high phytonutrients content is attracting a lot of attention, as it provides health benefits and has been shown to possess antimicrobial, antiviral, antiparasitic, anti-inflammatory, antioxidant, antimutagenic, and antitumor effects. To maintain food quality at the highest possible levels, there is a need to develop novel processing techniques such as non-thermal processing. This chapter discusses novel non-thermal processing techniques, including ultraviolet radiation, high pressure processing (HPP), dense phase carbon dioxide (DPCD), ultrasound processing, and pulsed electric field (PEF). The application of HPP and its effects on quality attributes, specific to the phytochemical compounds in fruits and vegetables. High pressure offers a technology that can achieve the food safety properties of heat-treated foods while meeting consumer demand for fresher tasting food products.

**Keyword:** Dense phase carbon dioxide; Food quality; Fruit phytonutrients degradation; Fruits phytonutrients; High pressure processing; Non-thermal processing effects; Pulsed electric field; Ultrasound processing; Ultraviolet radiation; Vegetable phytonutrients