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# A mechanistic perspective on process-induced changes in glucosinolate content in Brassica vegetables: a review

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## Abstract

Brassica vegetables are consumed mostly after processing, which is expected to give beneficial effects on the vegetable properties, such as improved palatability and bioavailability of nutrients, or shelf life extension. But processing also results to various changes in the content of health promoting phytochemicals like glucosinolates. This paper reviews the effects of processing on the glucosinolates content by using a mechanism approach underlying processing method employed. Cultural differences between Eastern and Western preparation practices and their possible effect on glucosinolate retention are highlighted. Boiling and blanching considerably reduce the glucosinolate content mainly due to mechanisms of cell lysis, diffusion, and leaching, and partly due to thermal and enzymatic degradation. Steaming, microwave processing, and stir frying either retain or slightly reduce the glucosinolates content due to low degrees of leaching; moreover, these methods seem to enhance extractability of glucosinolates from the plant tissue. Fermentation reduces the glucosinolate content considerably, but the underlying mechanisms are not yet studied in detail. Studying the changes of glucosinolates during processing by a mechanistic approach is shown to be valuable to understand the impact of processing and to optimize processing conditions for health benefits of these compounds.

**Keywords:** Brassica vegetable; Glucosinolates; health; mechanistic approach; processing.

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