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**Reestimating the role of leaching for loss of water-soluble vitamins in processed vegetables**

**Authors & affiliations:**

*Catherine M.G.C. Renard<sup>1,2</sup>, Nicolas Delchier<sup>1,2</sup>, Hannah Brick<sup>1,2</sup>, Caroline Garcia<sup>1,2</sup>, Sylvie Bureau<sup>1,2</sup>, Line Tichit<sup>1,2</sup>, Stéphane George<sup>3</sup>, & Jean-François Maingonnat<sup>1,2</sup>*

*1 INRA, UMR408 Sécurité et Qualité des Produits d'Origine Végétale, F-84000 Avignon*

*2 Avignon University, UMR408 Sécurité et Qualité des Produits d'Origine Végétale, F-84000 Avignon*

*3 CTCPA, Site Agroparc, F-84000 Avignon*

Fruit and vegetables are known to provide health benefits, and this is for a large part linked to their contribution to the diet for fibres, minerals (K, Ca) and vitamins, especially vitamin C (ascorbic acid), vitamin B9 (folate) and provitamin A (carotenoids). Vegetables in particular are almost systematically consumed after processing, whether industrial (freezing, canning...) or domestic (boiling, steaming, microwaving...). Understanding and quantifying their losses are therefore of utmost importance for assessing the actual contribution of vegetables to the diet or for nutrition-based optimization of industrial processing. Two mechanisms explain water-soluble vitamins losses from vegetables when heat-treated in presence of water, namely degradation and leaching (diffusion). Our recent results on impact of domestic or industrial processing of green vegetables indicate an important impact of leaching, which has been neglected so far.

To better understand the balance between degradation and leaching, we will present a synthesis of our recent work on :

- Effect of domestic preparation on vitamin C and folate contents in various vegetables;
- Impact of industrial processing on folates in canned green beans and frozen spinach
- Integration of thermal degradation and leaching for vitamin C and folate loss for green peas and Brussel sprouts.

These results highlight the relevance of leaching when water or a covering liquid are involved, with a strong kinetic effect i.e. particularly at the start of any heating step. This is modulated by vegetable's shape and size, temperature, presence of oxygen and pH. Losses of vitamin C are usually higher and more influenced by thermal degradation, while leaching takes more part in folate loss. For folate, losses by degradation depend strongly on the vitamins which are present and their proportions. Relevant models for water-soluble vitamins losses therefore require detailed chemical data and more emphasis on the determination of diffusion parameters.