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Nutritional quality of dried vegetables and vegetable soups

Dehydration of food has been used for centuries as a technique to increase shelf life and preserve nutrient quality during storage. However, degradation or loss of nutrients may occur during the drying process, either due to applied heat or leaching due to water removal. Therefore, we investigated nutrient retention during pre-processing and drying of vegetables used to prepare dry vegetable soups in 2 studies. First, nutrient levels were determined in fresh industrial tomato, onion, and lentil, as well as in the industrially dried products obtained from the same batches. Vitamin C and lycopene were selected as representatives for heat- and storage-labile nutrients in tomato. For onion, vitamin C and flavonols were taken, whereas folates were chosen as nutrient markers for lentils. Potassium contents were determined for all vegetables. Second, the overall nutritional quality of dry vegetable soups was assessed and compared with recommended dietary allowances (RDAs) and nutrition databases. Nutrients, including dietary fiber, minerals, vitamins and carotenoids were determined in ten commercial dry vegetable soup varieties. During the pre-processing and dehydration of tomato, lycopene remained stable, whereas 70% of vitamin C was retained. With regard to onions, 29% of vitamin C and 51% of flavonols were retained. Loss of folates during processing of lentils was between 10-25%, depending on the process applied. Potassium levels remained largely unaltered for all vegetables, indicating limited losses attributable to leaching. The nutritional profile of dry vegetable soups aligned well with nutritional databases and the profile of nutrient contribution from dry soups was consistent with the expected RDAs contribution from vegetables. A notable amount of nutrients were retained in vegetables after pre-processing and dehydrating and dry vegetable soups can therefore be considered a relevant source of vegetables and nutrients.

Biography

Christian H Grün has received an MSc in Chemistry and a PhD in Bio-organic Chemistry from Utrecht University, Netherlands. Before joining Unilever R&D in 2006, he has worked as a Post-doctorate Researcher in the area of Immunology at the Free University Medical Center in Amsterdam studying Host-Pathogen Interactions. After joining Unilever R&D, he has built a profound understanding in identifying and quantifying phytochemicals in complex (food) matrices as well as studying the metabolism and kinetics of nutrients in the human body.

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