

Better ways to store bagged salad in household fridge from consumer's perspectives

Evaluation of bagged salad quality stored in different packaging and fridge condition: A study with Electrolux
By Nalaputi Basoeki, Department of Design Sciences, LTH

When buying bagged salad cuts, have you ever noticed that the salad goes bad very rapidly as soon as you open the package although the package is always kept in the fridge at home? The quality deterioration may occur in the change of several quality parameters, such as color, weight loss, and texture. Say no more to short shelf life of salad by properly regulating and selecting some key factors of storage, including temperature, relative humidity, and types of package when storing it in the fridge.

Because of the convenience that it offers, bagged fresh cuts, in particular bagged salad, has gained its popularity over the years. The products have increasingly emerged on the market for both fruits and vegetable commodities, where fresh-cut vegetables, especially bagged lettuce, dominate the European market with about 50% of the fresh-cut volume market. Some reasons of its popularity are the quick meal-preparation and leafy vegetable variations in one bag.

The quality issues begin to emerge and to worsen during post-purchase of bagged lettuce at consumer's household. As soon as consumer opens the lettuce bag, the barriers (atmospheric and physical) that have been protecting the salad quality will be broken. This results in the acceleration of salad quality degradation, shortening the shelf life of product. This is undesirable from a consumers' perspective as they expect longer freshness quality, especially when the products are stored in the fridge. Moreover, there are also several challenges with household fridge usage, such as temperature instability and different relative humidity depending on the combination of different cooling system and control algorithm of the fridge, which may have impact on the deterioration rate of salad quality.

This study aimed to provide thorough understanding of the behavior change of fresh cut products at end-consumers with different possible scenarios on how they store the product in their fridge, with the focus on temperature, relative humidity, and types of packaging.

The study presented several important findings: First, different quality parameters were affected by different factors. For example, weight loss and condensation were affected by temperature, whereas color change was only affected by relative humidity. Fridge with higher relative humidity was more favorable in preserving the salad quality, such as better color retention and lower weight loss. Second, different packaging provided different level of protection. Higher exposure to oxygen resulted in higher deterioration rate of salad quality. It was also revealed that by folding the bag during storage in the fridge, lettuces had three times less weight loss, better color retention, and lower browning formation as compared to those stored in open bag. This is a very important insight for consumers to better preserve the salad at their home.

According to the survey, it was found that some consumers still complained about the use of plastic as salad bag packaging. This is the challenge that packaging industry must overcome, where better packaging design is needed to inform the consumers that food waste is a more dangerous issue that they have to be concerned at. They need to emphasize that by storing the salad better and finishing the salad, consumers can contribute more to sustainability instead of changing the packaging materials, as plastic is still the best material packaging to pack salad cuts for now.

Finally, the data can also be used by fridge company to better design their cooling system and provide more information to consumers on how to use the compartments properly so that the quality of bagged salad can last longer in consumer's home.