

**Title** Effect of plastic permeability and exposure to light during storage on the quality of minimally processed broccoli and cauliflower

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### **Abstract**

The impact of lighting on minimally processed broccoli and cauliflower packaged in four different film types (PVC and three P-Plus) has been measured and compared. The effect on the sensory quality of storage at 4 °C in darkness and under lighting was evaluated. The gas concentration in the packages, pH, mesophilic counts and weight loss was also determined.

Neither the type of film used for packaging nor the storage conditions led to changes in the evolution of pH or the microorganism count in broccoli and cauliflower. However, exposure to light stimulated stomatic opening facilitate the exchange of gases between the plant tissue and the atmosphere within the packaging. Thus, a considerable loss of water vapor was observed in the packages of both vegetables stored in the presence of illumination. Moreover, exposure to light stimulated respiratory activity so that for the cauliflower, the composition of the atmosphere within the packages varied depending on the permeability of the packaging film used and the storage conditions. However, in the case of the broccoli, the increase in respiratory activity due to the lighting was compensated by the photosynthetic activity which took place in these conditions, in such a way that the composition of the atmosphere inside the packs solely depended on the permeability of the film.

This difference in the physiological response conditioned the most suitable kind of packaging film in each case. For cauliflower, in conditions of darkness, P-Plus 120 film proved the most suitable for preserving its sensory qualities, while under conditions of lighting, this film did not prove suitable due to its low permeability. However, in broccoli the different packaging films tested behaved in a very similar way whether stored under lighting or in the dark.