

Title The effect of cutting direction on aroma compounds and respiration rate of fresh-cut iceberg lettuce (*Lactuca sativa* L.)

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Abstract

The purpose of this research was to investigate whether cutting direction and storage temperature could influence aroma formation and respiration rates in minimally processed lettuce. Lettuce was cut both longitudinally and transverse to the mid-rib and stored at 6 and 10 °C for 4 and 5 days. The experiment was performed in January and March 2008. Changes in respiration rate were analyzed during storage, and aroma analysis was carried out after 4 and 5 days of storage in January and March, respectively. Respiration rates increased with increasing storage temperatures. Transverse cuts to the rib were strongly related with volatiles of the lipoxygenase (LOX) pathway i.e. cis-3-hexenal, cis-3-hexenol and trans-2-hexenol, while longitudinal cutting enhanced formation of volatiles from other metabolic routes. Aroma formation was also influenced by storage temperature, where higher storage temperatures resulted in increases in α -longipinene, 2-methylbutanal and 3-methylbutanal. Our results demonstrate that cutting the lettuce transverse to the mid-rib caused more severe damage to the tissue than longitudinal cutting, based on aroma production of LOX