Title Baby-leaf and multi-leaf of green and red lettuces are suitable raw materials for the fresh-cut industry

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Abstract

Consumer demand for softer leaves with variation in taste, shape and colours has encouraged the development of new lettuce products of baby-sized leaves. The objective of this study was the comparison of whole-head lettuce, as the most common raw material for fresh-cut, with baby-leaf and multi-leaf as the newest baby-sized lettuce leaves. Lettuces (*Lactuca sativa* L.) of the types Green Leaf, Red Leaf and Lollo Rosso were cultivated in the same field with different plant densities, under commercial conditions. Although baby-leaf was subjected to far less wound damage than the shredded lettuce from the whole-head, leaf age could play an important role in increasing respiration rate and determining postharvest quality. After 9–11 d of storage, minimally processed products from the three types of raw material showed good visual quality without differences among them. However, over the 12-d storage period, quality decreased to the limit of marketability mainly due to browning of the cut edge surface of the fresh-cut product from whole-heads and decay due to the soft tissue in the case of baby-leaves. Additionally, with the processing of whole-heads, the increase in cut-damage surfaces and availability of cell nutrients provided conditions that favoured the growth of lactic acid bacteria (LAB) and total coliforms compared to uncut surfaces of baby-sized leaves. The ratio between the oxidized and reduced forms of ascorbate (DHA/AA) increased 2–4 times after 9–11 d of storage. Furthermore, baby-sized leaves had higher phenolic contents than the shredded product from the whole-head which probably contributed to reaching a shelf-life of 11 d. In conclusion, the new green and red baby-sized leaves both at immature and mature stages provided high quality lettuce for the fresh-cut market, meeting specific requirements regarding visual quality, microbial load and high content of phytochemicals.