Title Aroma volatiles of apples as influenced by ripening and storage procedures

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Abstract

Odour volatiles represent a major quality parameter for fresh produce. Consequently, improving the emission of volatiles in fruit has become an important challenge. A series of experiments were conducted in our laboratories in the last 20 years that aimed to elucidate the development of volatiles of various fruit types, but with an emphasis on apples. The major findings of these experiments are the following: 1) Early harvested apples had a poorer ability to produce volatiles, and that was coupled with lower respiration and less fatty acids (FA) levels. This may be related to the insensitivity of immature fruit to ethylene, since treatment with high concentrations of ethylene stimulated respiration, and increased the levels of FA and volatiles. 2) The biosynthesis of volatiles is highly reduced by apple fruit following ultra low oxygen (ULO) storage, and also after treatments with aminoethoxyvinyl glycine and 1-methylcyclopropene; the reduction became severe after an extended storage period. 3) Feeding apple fruit with volatile precursors (alcohols and aldehydes) stimulated the biosynthesis of the corresponding volatiles, mainly esters. Moreover, feeding AVG-treated fruit with precursors also led to a marked increase in the production of the corresponding volatiles. However, this effect was transitory with both ULO stored as well as with AVG-treated fruit.