High CO_2 short-term treatment to preserve quality and volatiles profile of fresh-cut artichokes during cold storage

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Abstract

In this research paper fresh-cut artichokes were treated for 48 h at 0 °C with different CO_2 concentration (CO_2-10%, CO_2-20%, CO_2-30%, CO_2-40%, AIR) and then stored for 7 d at 5 °C in air. High CO_2 short-term treatment until 30% reduced respiration rate, browning index, preserving the total phenols content and antioxidant activity at the level of untreated samples. However, the application of CO_2 concentration around 40% might cause a fermentative metabolism, according to maturity stage. VOCs analysis showed that CO_2-10% was the best treatment to preserve the volatile profile of the fresh samples, characterized by specific compounds, including terpenes, alcohols, esters, aldehydes, hydrocarbon and heterocyclic compounds. On the other hand, CO_2-40% resulted associated to fermentative compounds, mainly esters. Finally aqueous metabolite profile, evaluated by NMR, was not affected by CO_2 short-term treatments.