Volatiles-production correlates with ripening stage of Melons

The production of volatiles correlates with the ripening of melons and is affected by time and temperature. This is the conclusion from research by Wageningen Food & Biobased Research, carried out within the GreenCHAINge program. The insights gained allow chain partners to optimize the moment of harvest, the storage and the retailing of melons.

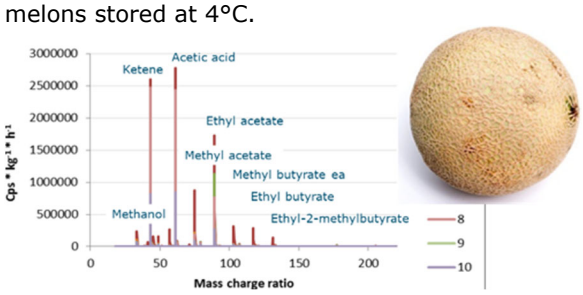
The four-year program GreenCHAINge, successfully completed in December 2018, will improve the intrinsic quality of fresh fruits and vegetables on the shelf, via its innovative 'smart chain'. Work Package 2 focused on delivering and maintaining high-quality and uniform melons in-store.

Ripening and volatiles production

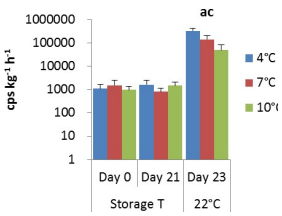
First, the scientists determined the maturity and ripening stages of melons from the popular cultivar Natal, and then defined the optimal moment for harvesting and post-storage sales. They measured volatile profiles at different storage temperatures and correlated ripening stages with the melon's volatiles production. Key volatiles include acetaldehyde, esters and ethanol; fruity odours that relate to fruit ripening.

Volatiles production during storage

Production of volatiles, correlated to ripening, appeared to decrease during storage, irrespective of storage temperature. Melons released more aroma volatiles (acetaldehyde, esters and ethanol) at 22°C (simulating home and supermarket conditions), compared to 4°C (simulating storage). Measuring the volatile profile of melons initially stored at 4º, 7º or 10°C, and subsequently stored at 22°C, showed an increase in volatiles production upon the rise in temperature, suggesting an accelerated ripening after cold storage, which was the highest for melons stored at 4°C.



"Correlating the volatiles pattern (aroma) with ripening allows optimal timing of harvest, storage- and point-of-sale time in the chain"



Volatiles production at 0, 21 and 23 days after storage. Melons were stored from day 0 till 21 at 4Cº, 7Cº or 10°C, followed by warming up to RT (Room Temperature, 22°C) from day 21 onwards. After 21 days of storage and the rise to 22°C, volatiles production increases significantly.

For detailed information about this project result please visit www.wur.eu/greenchainge.

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