

- Sensory evaluation of dark origin and non-origin chocolates applying TDS

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Abstract:

Dark chocolates are rich sources of polyphenols, widely acknowledged for eliciting several beneficial health effects. However, these compounds are key inducers of bitter taste and astringency, potentially limiting consumers' acceptance of chocolates with higher cocoa contents. In order to gain better insight in consumers' choices, the present study investigated the temporal profile of bitterness and astringency as well as sweet taste as covering agent, during the testing period in 5 dark origin (OR) (66.8–80.1% cocoa) and 6 non-origin (N-OR) (54.5–80.0% cocoa) chocolates with different cocoa contents, applying Temporal Dominance of Sensations (TDS). The temporal profile of the evaluated OR chocolates was characterized by the dominance of bitterness independent of cocoa contents (%cc), reaching maximum dominance rates (DR%) between 60.0 and 80.0% over approximately 75.0% of the testing period, i.e. prior to swallowing. After swallowing, astringency dominated, mostly not significantly. DR (%) of sweetness reached the level of significance only in one sample (OR 67.4%cc). N-OR chocolates with 54.5–60.0%cc were characterized by significant dominances of sweet taste along the entire evaluation period, reaching maximum DR% between 90 and 95%. The increase of cocoa contents was combined with higher DR% of bitter taste. Astringency dominated in N-OR samples at the end of the evaluation period presumably after swallowing. Finally, in N-OR chocolates, cc% highly affected the dominance of the evaluated attributes. This impact was found to be rather minor or absent in OR chocolates. Thus, the TDS parameters showed variations in attribute's dominance in OR and N-OR chocolates indicating a strong influence of cocoa bean variety and local conditions (environmental and farming conditions as well as post-harvest treatment practices) in addition to cocoa contents.

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