Differential transcriptomic profile between early- and late-maturing sweet cherry varieties in response to GA_3 reveals a role of gibberellins during fruit ripening.

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Gibberellins (GAs) are extensively used in agriculture. GA_3 treatment is known to affect fruit ripening in non-climacteric fruit crops, causing a delay in fruit color development and anthocyanin accumulation. It additionally increases fruit size and firmness and may affect sugar and acidity. However, there is few information about the molecular interactions of exogenously applied GA_3 reported in non-climacteric fruits, such as sweet cherry. In sweet cherry fruits GA_4 and GA_3 accumulate prior to ripening initiation, but then they reduce their content as the fruit colors. GA_4 is negatively correlated with anthocyanin and sugar content.
Here we found that anthocyanin content and several ripening related parameters were affected by GA_3 when applied prior to ripening initiation in sweet cherry fruits. Differential transcriptomic profile was found between GA_3- and control-treated fruits. Auxin response, photosynthesis and cell division GO categories were found to be overrepresented. The results suggest that GAs negatively affect ripening possibly by controlling pathways related to the ripening process, but on the other hand, there is a fruit sizing effect, that possibly depends on the activation of cell proliferation.

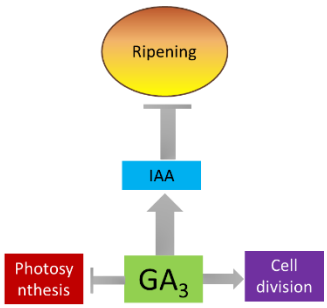


Fig. 1: Effect of GA_3 treatment on fruit process at the ripening initiation in sweet cherry. IAA, indol acetic acid (auxin).

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