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Title: Stability of Pelargonidin 3-glucoside in Model Solutions in the Presence and Absence of Flavanols

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**Abstract:** The stability of pelargonidin 3-glucoside (Pg3gluc), the main anthocyanin in strawberry, has been studied in model citrate solutions (pH 3.5, 25°C) in the absence and presence flavanols (catechin and procyanidin B3) and/or oxygen. Changes in the solutions were monitored by HPLC-DAD/MS and UV-visible spectra. A progressive decrease in the concentration of the anthocyanin was produced according to a first-order kinetics whose rate was influenced by the composition of the medium. The availability of oxygen was the most influential factor on the stability of the anthocyanin that decreased much slower in anaerobic conditions. On the contrary, the presence of flavanols constituted a destabilizing factor for the anthocyanin. In the absence of flavanols, the anthocyanin was mostly degraded to colourless compounds, although the formation of some unknown unstable pigments with maximum absorbance in the visible region around 400-460 nm was also observed. In the presence of oxygen the breakdown of the heterocycle was found to constitute a major pathway for anthocyanin disappearance, whereas this mechanism was hardly produced in anaerobic conditions. In the presence of flavanols the disappearance of the anthocyanin was mostly due to condensation reactions, yielding both colourless products and xanthylium pigments. Conclusions about the structure of some of the products and pigments formed on the solutions were obtained based on their mass spectra and fragmentation patterns.

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