Public Abstract
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Title:COLOR STABILITY OF SORGHUM 3-DEOXYANTHOCYANINS AGAINST SULFITE AND ASCORBIC ACID DEGRADATION; pH INFLUENCE

The degradation of anthocyanins by food additives like SO2 and ascorbic acid limits their use as natural food colorants. The rare 3-deoxyanthocyanins from sorghum are relatively stable compared to other anthocyanins, but have not been investigated. The stability of apigeninidin, luteolinidin, 5-methoxyapigeninidin, 7-methoxyapigeninidin, 5,7-dimethoxyapigeninidin and 5,7-dimethoxyluteolinidin, red cabbage pigment, grape blue powder and crude sorghum pigment extract against SO2, ascorbic acid bleaching and high temperature treatment (121.1°C for 15 min) at pH 2.0, 3.0, 3.2 and 5.0 was measured in the presence (50:1 molar ratio) or absence of pyruvic acid (known to increase the stability of anthocyanins in red wine). Samples were incubated at 37°C for 5 days to synthesize the pyruvic acid adducts, and their sulfite and ascorbic acid bleaching resistance investigated at 60 ppm and 500 ppm respectively, using a Shimadzu UV-1650PC spectrophotometer for 21 days. HPLC-DAD/MS analysis confirmed the formation of the 3-deoxyanthocyanin-pyruvic acid adducts at approximately 11-47% conversion. Samples without pyruvic acid were the controls. Solution pH had the greatest effect on pigment stability, and SO2 and ascorbic acid are co-pigments with 3-deoxyanthocyanin pigments in absence of pyruvic acid at pH 2.0 and 5.0, respectively. Pyruvic acid had marginal protective influence on the stability of the 3-deoxyanthoxyanin pigments against sulfite and ascorbic acid degradation but not heat. Crude black sorghum extract was the most stable to SO2 and ascorbic acid bleaching, with and without pyruvic acid. High temperature initiated production of new 3-deoxyanthocyanin-pyruvic acid adducts.