

Hydrogen sulfide reduced colour change in Lanzhou lily-bulb scales

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Abstract

The present study showed that hydrogen sulfide (H_2S) plays a critical role in reducing the colour change of Lanzhou lily during storage, which has not been previously reported. We detected the colour change, especially the violet-red colour, of lily-bulb scales that were treated with different concentrations of NaHS (a H_2S donor) by the L^* , a^* and b^* and the browning degree of the scale surface. The colour change was reduced as the NaHS concentration increased. Among the different concentrations tested, 0.8 mM NaHS was optimal, which remarkably improved the appearance quality of the scales and decreased the content of total anthocyanins. The results of the HPLC analysis showed that the anthocyanin compounds might be cyanidin. These results indicated that H_2S improves the appearance quality of the Lanzhou lily might by regulating the content of anthocyanins. Moreover, the changes in the anthocyanin synthesis-related gene expression were inhibited by NaHS. This was consistent with the anthocyanin synthesis-related key enzyme activity. Thus, H_2S decreased the colour change caused by anthocyanin accumulation by regulating the activity and gene expression of key enzymes in the anthocyanin synthesis pathway, thereby improving the appearance quality of the scales of Lanzhou lily during postharvest storage.