Environmental risk assessment and release of flower color modified transgenic plants

Yoshikazu Tanaka, Steve Chandler

Flower color is genetically determined, mainly by the structures of anthocyanins. These flavonoid classes are largely responsible for orange, red, violet and blue flower colors. Engineering the anthocyanin biosynthetic pathway leads to novel flower colors in transgenic plants. Flavonoid 3', 5'-hydroxylase is critical for plants to accumulate the delphinidin-based anthocyanins that most blue/violet flowers contain. Carnation and rose plants expressing this gene produce blue/violet color flowers accumulating delphinidin-based anthocyanins. Through the extensive regulatory approval processes that must occur for the commercialization of transgenic carnation and rose, we have obtained experimental and trial data to show commercial release poses no environmental risk. Though not required to be regulated as a food, it is relevant that delphinidin-related anthocyanins are also found in common foods like blue berry, eggplant and red bean. Experimental and literature studies suggest that no potentially negative health impacts could be associated with consumption of the transgenic flowers.
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