

NEW GM SUPER-FRUIT: HIGH ANTIOXIDANT PURPLE TOMATOES



Scientists have now created a genetically-modified (GM) purple tomato variant that has purple flesh and 3 times more antioxidants than normal tomatoes.



WHY ARE THEY PURPLE?

The purple colour comes from naturally-occurring pigments called **anthocyanins**. They are flavonoids that can be found in fruits and vegetables. Anthocyanins have antioxidant properties and multiple health benefit claims. Depending on their pH, may appear red, purple, blue, or black.

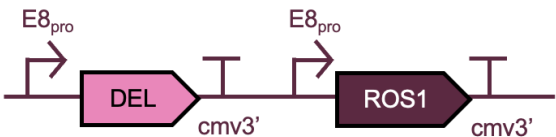
Most tomato cultivars do not naturally synthesise anthocyanins in the fruit.



Butelli et al., (2008)



Two transcription factors, **Rosea1 (Ros1)** and **Delila (Del)**, play a role in anthocyanin pigmentation in the various flowers, vegetables and fruits. **ros1** and **del** genes from the **snapdragon flower** were inserted into tomato via *Agrobacterium* transformation.



Both genes driven by E8 promoter that influences plant hormone ethylene biosynthesis in the tomato fruit.

RESULTS



Multiple anthocyanin biosynthetic genes' expression significantly increased



Total antioxidant activity was 3-fold higher than the wild-type

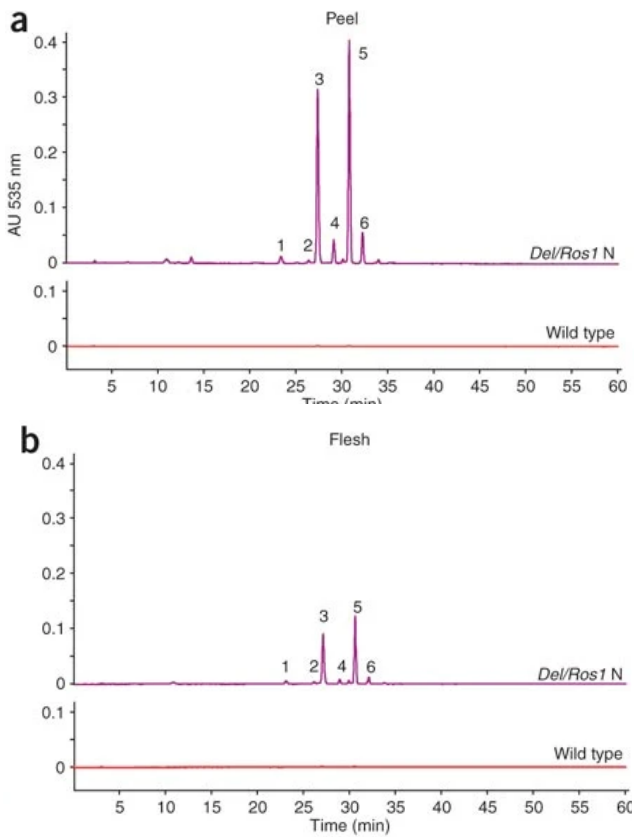


High antioxidant phenotype has been maintained through five generations



Cancer-susceptible mice fed with these tomatoes had significantly longer lifespan up to 30%

HPLC chromatogram of methanol extracts from Del/Ros1N (purple line) and wild-type (red line) tomato fruit (Butelli et al., 2008)



WHO DEVELOPED IT?

Norfolk Plant Sciences have been working on this for 15 years and the GM tomatoes have been approved by United States Department of Agriculture (USDA) in September 2022

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