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Metabolic Engineering of Anthocyanins: Tailoring Plant-Derived Bioactives for Nutraceutical and Personalized Medicine Applications.

Anthocyanins are one of the very important bioactive flavonoid pigments which are synthesized in plants. Many researchers found that these red, purple or blue pigments are rich in antioxidants and are required in the diet to increase nutrition and improve the immune system. These anthocyanin syntheses take place in the cytoplasm and are known to get accumulated in vacuoles where the acidic environment enables the synthesis of coloured pigment. It might be very efficient if such secondary metabolites can be easily synthesized by bacteria so they can be used as a supplement to the diet. Genes involved in the biosynthetic pathway can be isolated and transformed into many feasible strains to increase their synthesis. Manipulation of the possible pathways to synthesize anthocyanins had been tried by quite a few of them either by overexpression or silencing. The various strategies applied to manipulate the pathways in E. coli by the selection of genes from varied sources of cloning and targeting specific locations for the expression of anthocyanins were discussed here.

Keywords: Anthocyanins, antioxidants, genes, cloning, E. coli

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