Abstract

The aim of this project is to enhance the nutritional content and yield of *Brassica oleracea*(broccoli) through genetic engineering. Broccoli is known for its large quantity of essential vitamins such as C, K, and A and minerals such as potassium, calcium, and iron as well as antioxidants such as vitamins C and E, and β-carotene. Our focus is on arranging the makeup of broccoli to increase its protein and glucosinolate content.

We intend on using CRISPR genetic editing to maximise two genes, MYP34 and CYP79A2, and conduct cross-plant genetic engineering with Chinese kale to introduce the BoMYB29 gene and Serine/threonine protein kinase SRK2n (SnRK2) genes. Techniques such as gel electrophoresis and colorimetry will be utilised to check the modified nutrient levels. This project uses biotechnology to create a healthier and more resilient crop which is important for both agriculture and human nutrition.