

THE CHEMISTRY OF BROCCOLI

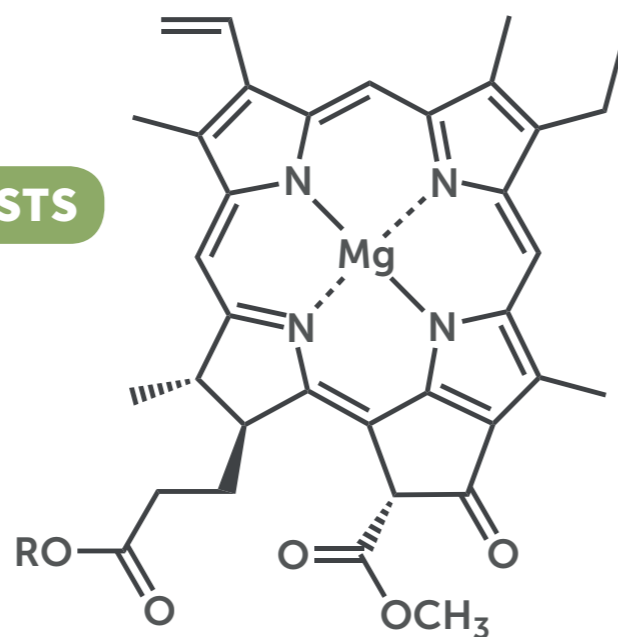
COOKING COLOUR CHANGES

Like other green vegetables, broccoli's colour comes from chlorophyll. Chlorophyll is found within the chloroplasts of plant cells. What causes this colour to intensify during cooking?



CHLOROPLASTS

CHLOROPHYLL A

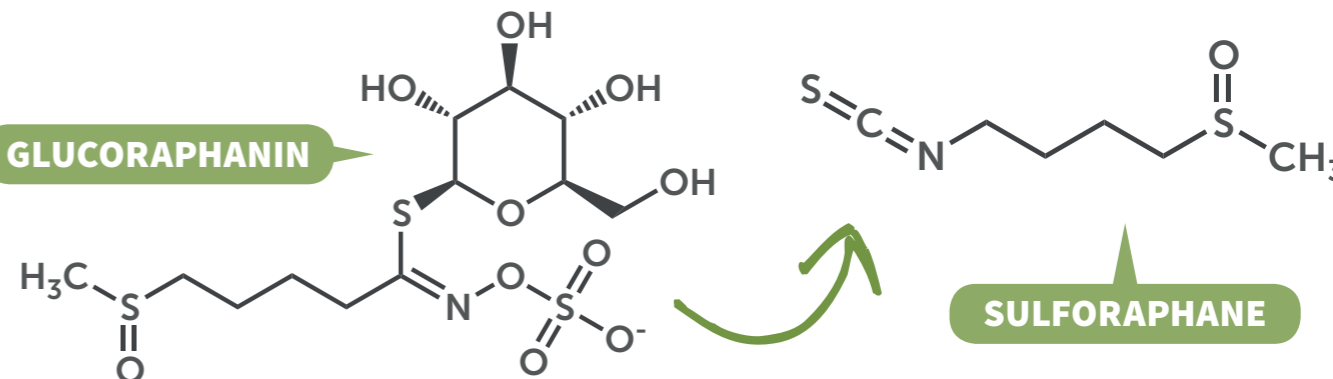


Pockets of air in the space between plant cells cause the green of chlorophyll to be slightly clouded. During cooking these gas pockets expand and escape. This makes the green colour intensify. The effect doesn't last long, however. Cooking also causes plant cells to burst, releasing organic acids. Hydrogen ions from these acids react with chlorophyll to form pheophytins, making the greens less vibrant.



SULFORAPHANE AND CANCER

GLUCORAPHANIN



SULFORAPHANE

Chopping broccoli releases the enzyme myrosinase from cells. This acts on the glucosinolate compound glucoraphanin; one of the products is sulforaphane. Sulforaphane has been investigated due to its ability to kill cancerous cells. As myrosinase is heat-sensitive, cooking method affects the amount of sulforaphane present. Other sulfur compounds give broccoli its odour when cooked.

