Betacyanin

Business

Betacyanin is a pigment contained in the plasma membrane of the beet. Betacyanin is contained within the cell membrane and it will be released from the cell when it undergoes physiological and physical stress from environmental factors such as severe temperature, pH, detergents, and organic solvents. The laboratory experiment will examine the effects of temperature, detergents, and organic solvent on the plasma membrane of the beet, Beta vulgaris. Series of experiments will be performed to determine the stability of beet plasma by measuring the quantity of betacyanin produced by the beet cells when subjected to varying conditions: different pH, temperature, and detergents that cause stress of cell membrane by the use of spectrophotometer between the ranges of 400nm to 700nm.

The extent of damage on the plasma willbe determined by the release of the beet pigment known as betacyanin. My hypothesis is that extreme temperature ranges, detergents, detergents and organic solvents damage plasma membrane of the beet. This hypothesis is based on the mere knowledge that environmental and physiological stress denatures protein molecules on the plasma membrane. In my experimental prediction, extreme changes in temperature, pH, detergents and organic solvents will damage plasma membrane hence releasing betacyanin. High pH and low pH resulted in absorbance values that were similar to the control.

The absorbance value of the betacyanin in the control was 0. 062nm while that of low pH (pH value of 3) and high pH (pH value of 10) were 0. 080nm and 0. 072nm respectively. Extreme high temperature, extreme low temperature, detergents and organic solvents result in absorbance vaalues exceeding that of the control in the order of 1. 166nm, 0.

939nm, 0. 312nm, and0. 154nm respectively. Explanation of ResultsDuring the experiment, it was observed that controls were not affected or were least affected gauging from the least amount of betacyanin that were released from the cell membrane of the beet. The only conditions that did not disrupt plasma membrane include de-ionized water with a pH value of 7 (neutral). The other conditions that disrupted beet cell plasma membrane include the presence of detergents, organic solvents, extreme high temperature, extreme low temperature, low pH and high pH.

The extreme high temperature and extreme low temperature had the most severe effect on beet plasma membrane integrity followed by detergent, low pH and high pH in that order.