

We have elucidated the cooperative stabilization of proteins by sugars, amino acids, and other protein-stabilizing agents using a new and simple assay system. Our system determines the protein-stabilizing ability of various compounds by measuring their ability to protect hemoglobin from denaturation. Hemoglobin denaturation was readily measured by quantitative changes in its ultraviolet–visible absorption spectrum. The efficiency of our assay was confirmed using various sugars such as trehalose and sucrose that are known to be good protein stabilizers. We have also found that mixtures of two different types of protein stabilizers resulted in a cooperative stabilizing effect on protein.

A simple assay system to measure the efficiency of protein-stabilizer was developed. The cooperative effect of mixing protein stabilizers were elucidated using this assay system.

