

Translate into Chinese

1. Usually, several separation techniques are used in sequence to purify a protein from a food. In general, the more separation steps used, the higher the purity of the resulting preparation. Food ingredients such as protein concentrates may be prepared using only one separation step because high purity is not necessary. To prepare a pure protein for laboratory study it is often necessary to use three or more separation steps in sequence to achieve a highly purified protein preparation. Before starting a separation sequence, it is necessary to learn as much as possible about the biochemical properties of a protein, such as molecular weight, isoelectric point (pI), solubility properties, and denaturation temperature, to determine any unusual physical characteristics that will make separation easier. The first separation step should be one that can easily be used with large quantities of material. This is often a technique that utilizes the differential solubility properties of a protein. Each succeeding step in a purification sequence will use a different mode of separation. The most common methods of purification include precipitation, ion-exchange chromatography, affinity chromatography, and size-exclusion chromatography. (25 points)
2. The formation of alcohol from sugar is accomplished by yeast enzymes which are contributed by the growing yeasts. *Saccharomyces ellipsoideus* is the true wine yeast. There is normally a population of yeasts on grape skins. When a viable yeast cell has access to sugar from juice of a crushed grape, fermentation begins. Usually the true wine yeast is present in sufficient quantities to dominate the fermentation. However, the juice may be heated to kill contaminating organisms, and reinoculated with pure culture wine yeasts. In certain special instances (i.e., effervescent sparkling wine) it is essential that a secondary fermentation occurs in the bottle to develop a carbon dioxide content. (25 points)
3. Iron is an essential element for all organisms. It functions as a component of many important enzymes and proteins involved in fundamentally biochemical processes. In plants, iron is one of the most common elements limiting plant growth because it exists predominantly in an oxidized ferric form ( $\text{Fe}^{\text{III}}$ ) in aerobic environments. The ferric iron has an extremely low solubility at neutral or basic pH and is not readily available to plants. To meet iron demand for growth and development, two effective iron acquisition systems known as strategy I and strategy II have been evolved in higher plants. Tomato uses the strategy I and the rice plant uses strategy II mechanism to acquire iron from soil. (25 points)
4. The results were analyzed by ANOVA considering the treatments as the independent variable. All statistical analyses were carried out with the program SPSS 11.0 for Windows. All values are expressed as mean values. Significant statistical differences of all variables between different treatments were established by the Tukey's test at  $p < 0.05$ . A correlation matrix was calculated with the values of the different parameters. The significant levels ( $p < 0.01$ ) and  $p < 0.05$ ) are based on the Pearson coefficients. (25 points)