Identification of an unknown amino acid biochemistry assignment

Abstracter is important substance for all living organisms. The physical and chemical properties of water play a central role in biological structure and function of the organism. The unionization ability of water to form H+ and OH- ions make It very unique. The hydrogen-ion concentration of biological system Is usually preferred as the pH system, which determines the pH level of dilute aqueous solutions. In this laboratory, the data collected from the experiment will be used to graph the titration revues which help to Identify an unknown amino acid.

Intercommunication acids are simple monomers which are strung together to form proteins. Amino acids play a key cellular role In structure and function. Proteins themselves participate In nearly every physiological event In the cell. Since all amino acids contain at least one amino and one carbonyl group, they are classified as empathetic substances (meaning that they can act as either an acid or as a base) (1 Treating the extension with acid will result an addition of proton to the COO to form COHO.

Likewise, treating the extension with base will result in the loss of the removable proton attached to the NH+ group to form NH, the following pH dependent equilibrium is shown below (Fig. 1) (2). Figure 1 . The pH dependent equilibrium reaction effects of pH and buffer play a significant role in the propagation and deforestation of water. The survival of organisms depends on the pH levels. Due to the nature of amino acids, a titration curve can be employed to identify an unknown amino acid. A titration curve is the plot of the pH versus the volume of iterant used.

In the case of amino acids, the iterant will be both an acid and a base. The pH at which the net charge of an amino acid is zero is called the sclerotic point, or the Pl. The Pl could be determined by averaging the two peak values that flank the neutral species. At the Pl, the a-carbonyl group is a negatively charged carboxylic ion, the a-amino group is a positively charged ammonium ion, and the y-carbonyl group is a neutral propionate acid (1). In this experiment, the identity of an unknown amino acid was determined through acid-base titration.

The unknown amino acid could be glutamate, lysine, or histamine. The glycogen was also titrated for comparison (Fig. 2). Figure 2. The structural formulas of four amino acids at pH of 7. 0. Methods experiment was accomplished according to the procedure given by Professor. Results glycogen was titrated and dada was recorded. The total solution of Noah added was 28. 0 ml: the total solution of HCI added was 22. 0 ml (Fig. 3). Added was 40. 0 ml; the total solution of HCI added was 17. 0 ml (Fig. 4). Figures 3 and 4 represent the exploratory titration and the accurate titration curves respectively.

Also, the dots on figures 3 and 4 show the amounts of base and acid added to the unknown solution and the pH which corresponds to that amount. Discussion and Conclusions titration of a weak acid with a strong base is an excellent way to observe the equilibrium reactions associated with a weak acid. The analysis of the titration curves provides a means of determining the dissociation constant of the acid. Under ideal conditions the dissociation can be used to identify an unknown acid. The peak of the acid is equal to the pH at the midpoint of the titration curve.

To identify the unknown amino acid its peak was used as a comparison to the known value of lysine, histamine, and glutamate. The equivalence point of titration from the titration curve of the unknown amino acid was estimated. It was found that the equivalence point of the first, second, and third peak(s) are approximate at a pH of 2. 48, 4. 86, and 9. 84. These values were been compared with lysine, histamine, and glutamate peak(s). It was determined that the peak(s) of the unknown amino acid were very close to the peak(s) of glutamate (2. 10, 4. 07, 9. 47). It was assumed that the known amino acid was glutamate.

There was an error that can be held accountable for the deviation from the accepted values. First, the pH meter never reported a definite value; very often the meter reported a floating number. Therefore, one has no way of knowing which reported pH was more correct. To avoid such a problem in a future, more careful handling with equipment is necessary during the titration process to minimize the occurrence of error.