A Simple Method for Protein Purification

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Protein Purification has traditionally been carried out by a method of column chromatography. This method requires expensive equipment and takes longer to get a pure protein. However, this method has been considered the most efficient method because it consistently gives pure yield. In affinity chromatography, a sequence of histidines attaches to a pure target protein. These histidines bind to metal cations in the column, and the rest of the proteins flow through the column. Imidazole is then used to elute the target protein down the column. This project investigated the three phase partitioning method ,using a tag protein, as an alternative to column chromatography. In this method, recombinant proteins were dissolved in a mixture of ammonium sulfate, tert-butyl alcohol, and urea. The mixture was then separated into its chemical components and the yield was measured in each component. To analyze the yield, SDS-PAGE was used, and the markings of proteins were then compared to a protein marker. The results showed that three-phase partitioning of tag protein fusion with interleukin alpha resulted in the tag protein being found only in the urea layer. In fact, the tag protein was almost pure at 8 M urea. The 3 phase treatment of tag protein fusion with interleukin alpha also showed that the tag protein could protect the fusion protein and keep it in the urea layer. These results showed that three phase partitioning with tag protein could yield pure protein.

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