A modified and concise method for albumin purification

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Background and Objective: Among different proteins of blood, albumin is considered a unique protein due to having special properties. It is synthesized in the liver hepatocytes and is responsible for over 80% of plasma colloid osmotic pressure. It is used for critical disease such as hypovolemia and hypoalbuminemia. Now, various protocols are used for the albumin purification worldwide, each of them has its own advantages and disadvantages. Meanwhile, a common method which is often used for the production of albumin is a combination of Cohn along with different types of chromatography. The aim of the present study was to create a concise and cost-effective albumin purification method by employing a conventional method with some modifications.

Materials and Methods: In this research, the albumin was purified from human serum using chilled ethanol, followed by chromatographic methods. The purity of harvested albumin was evaluated by sodium dodecyl sulfate-polyacrylamide gel electrophoresis (SDS-PAGE). Western blotting (WB) analysis and thermostability were used for functional and stability measurement assessment, respectively.

Findings: SDS-PAGE showed that the purity of purified human albumin was about 99%. Purified human albumin showed a single band with a molecular weight of 66 KDa. The results were validated by WB analysis.Also, the heat-induced insolubility of purified albumin was same as the commercial albumin.

Conclusion: This method can be a robust technique for purification of albumin in order to use clinical and research approaches.

Keywords: Albumin; Ethanol precipitation; Gel filtration; Ion exchange chromatography; Purification