

عنوان مقاله:

An overview of recombinant human serum albumin purification methods

محل انتشار:

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خلاصه مقاله:

Albumin, as a most dominant plasma protein, constitutes about 60% of the serum proteins. This protein has a great effect on the oncotic pressure maintenance and transportation of various endogenous and exogenous ligands. Cell culture supplement, drug delivery carrier and protein/drug stabilizer can also be regarded as its usage, too. Reduced amounts of albumin in the body can cause different types of diseases such as hypovolemia and hypoproteinemia. So, the demand for albumin increased annually worldwide. Material and Methods: Up to now some laborious studies have been conducted to innovate new methods of albumin production. Traditional techniques such as chromatography fractionation have been used extensively. As respects, the raw material of these methods is serum with related safety limitation, occurrence of protein denaturation, whole blood requirement, blood supply restriction, high cost, and unsuitable purity. Hence, efforts have been focused on producing albumin via recombination technology. Some of the methods in which albumin is produced by recombination are as follows: transgenic rice, transgenic animals, transgenic plants and plant cells, *Escherichia coli*, *Saccharomyces cerevisiae*, *Pichia pastoris*, *Kluyveromyces lactis* and etc. Findings: Final cost of biopharmaceutical products as a critical point in this industry, mostly affected by downstream part which is purification phase. Hence, in large scale manufacturing, investigation of fully cost effective and operative method seems to be necessary. In clinic and research approaches, albumin is consumed world widely due to its structural stability and high concentration in plasma. The annual demand for human albumin is 500 tons in the world, which is the most in the biomedical solutions demand ranking. Regarding to albumin protein priority, many efforts have been accomplished to achieve albumin during a long period of time. However, there are several limitations for using blood. Therefore efforts have been done to produce albumin via recombination technology. Conclusion: Recently, recombination technology tries to produce a mass production of albumin with high purity, without using a huge volume of blood. In this review different methods of recombinant albumin production will be discussed, regarding to the advantages and disadvantages of them

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