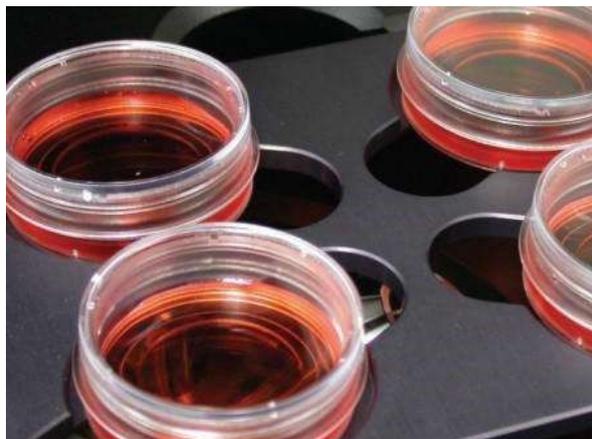


Analysis of the amino acid composition of cell culture media



The composition of cell culture medium is one of the most important factors for the success of cell culture in vitro. Cell culture medium must contain sufficient nutrients to meet the material and energy needed to complete new cell synthesis, cell metabolism and other biochemical reactions. The main components of cell culture medium include water, amino acids, vitamins, carbohydrates, inorganic salts and other auxiliary nutrients.

Introduction

With the rapid development of biopharmaceutical enterprisers in China, being as an important raw material of biopharmaceuticals, culture media have gradually been paid attention to by some biomedicine and biological products companies. Although culture medium is not the only important factor in cell culture, it is indeed the most important one. Being as one of the raw materials in the development and production of antibodies and recombinant protein drugs, it directly affects the quality and quantity of the product and has a significant impact on the cell culture medium. Monitoring the content of each component and the change of component content of culture medium during the cell culture process is of great significance to establishment of an efficient cell culture process.

Different types of cells have different requirements for amino acids. Essential amino acids include L-glutamine, L-histidine, L-isoleucine, L-leucine, L-lysine, L-methionine, and L-Phenylalanine, L-threonine, L-tryptophan, L-valine, etc., all of which are necessary raw materials for cells to synthesize proteins, they are unable to be converted and synthesized by other amino acids or sugars. In addition, glutamine is also necessary for human. Glutamine has a special function and is particularly important for cell culture. It can promote various amino acids enter into cell membrane; its nitrogen is the source of purines and pyrimidines in nucleic acids, and it also synthesizes adenosine monophosphate, adenosine diphosphate and adenosine triphosphate. Raw materials. Cells need to synthesize nucleic acids and proteins from glutamine. Lacking of glutamine will lead to poor cell growth even death. A certain amount of glutamine should be added in the preparation of various culture media.

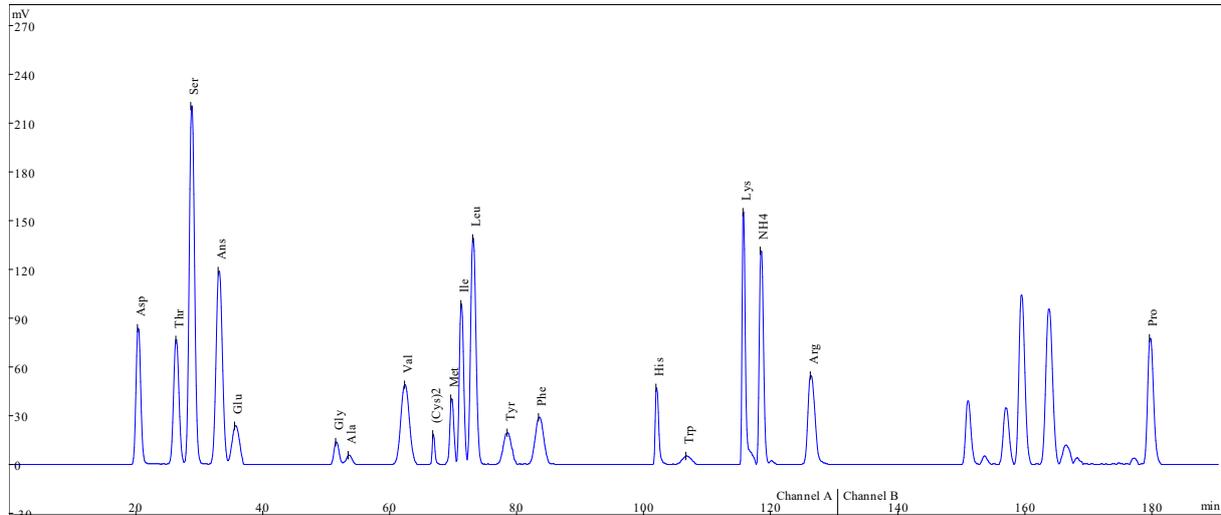


Figure 1: The sample was diluted in sample dilution buffer and subjected to protein precipitation by adding precipitation solution. After the sample was filtered and centrifuged, the free amino acids were separated using a lithium cation exchange column and then derivatized with ninhydrin. The detection was performed at 440 nm and 570 nm. The concentrations of the individual amino acids were determined using a known concentration of a standard amino acid mixture.

membraPure GmbH



**Wolfgang-Küntschers-Str. 14
D - 16761 Hennigsdorf
Germany**