

High Performance Liquid Chromatography: Phases and Implementation

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DESCRIPTION

HPLC is an abbreviation for high performance liquid chromatography. "Chromatography" is a separation technique, and "chromatograph" is a device for performing chromatography. Among the various techniques developed for chromatography, molecular separators called columns and high-performance pumps for dispensing solvents at stable flow rates are some of the key components of chromatographs. Only compounds dissolved in the solvent can be analyzed by HPLC. HPLC separates the compounds dissolved in a liquid sample, allowing qualitative and quantitative analysis of the components contained in the sample and the amount of each component. It includes solvent pump, degassing unit, sample injector, column oven, detector and data processor. Similar to HPLC, the pump pumps the mobile phase at a controlled flow rate.

HPLC can separate and detect each compound by the difference in the rate of each compound passing through the column.

HPLC has two phases, a mobile phase and a stationary phase. The mobile phase is a liquid that decomposes the target compound. The stationary phase is part of the column that interacts with the target compound. The stronger the in-column affinity between the component and the mobile phase (such as Van der Waals forces), the faster the component will move in the column with the mobile phase. On the other hand, the stronger the affinity for the stationary phases, the slower the movement within the column. The rate of elution on the column depends on the affinity between the compound and the stationary phase.

Manufacturing HPLC has many uses in both laboratory and clinical sciences. This is a common technique used in drug development because it is a reliable way to maintain and ensure product purity. HPLC can produce very high quality (pure) products, but it is not always the primary method used in the production of bulk pharmaceuticals.

Legally this technique is also used to detect illegal drugs in the urine. The most common method of drug detection is the immunoassay. This method is much more convenient research. Similar assays can be used for research purposes to detect concentrations of potential clinical candidates such as antifungal and asthma drugs. Obviously, this technique is also useful for observing multiple species in collected samples, but standard solutions should be used when looking for information on species identity.

The medical uses of HPLC can include drug analysis, but it is closer to the category of nutrient analysis. Urine is the most common medium for analyzing drug concentrations, but serum is collected using HPLC in most medical analyzes.

CONCLUSION

Among the various techniques developed for chromatography, molecular separators called columns and high-performance pumps for dispensing solvents at stable flow rates are some of the key components of chromatographs. Only compounds dissolved in the solvent can be analyzed by HPLC. HPLC separates the compounds dissolved in a liquid sample, allowing qualitative and quantitative analysis of the components contained in the sample and the amount of each component.