



High-Performance Liquid Chromatography

HPLC

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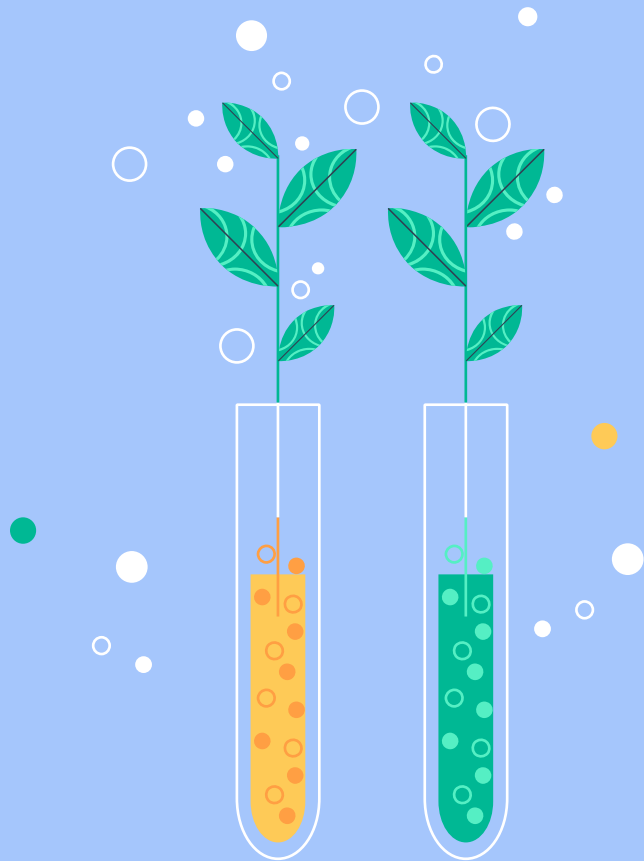
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01

Introduction

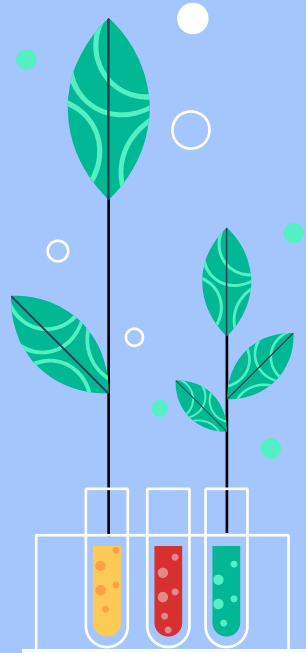
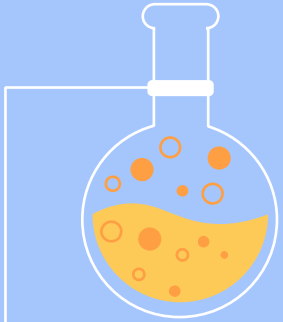


Introduction

HPLC stands for "High-performance liquid chromatography"(sometimes referred to as High-pressure liquid chromatography).

High performance liquid chromatography is a powerful tool in analysis, it yields high performance and high speed compared to traditional columns chromatography because of the forcibly pumped mobile phase.

HPLC is a chromatographic technique that can separate a mixture of compounds.



Define HPLC



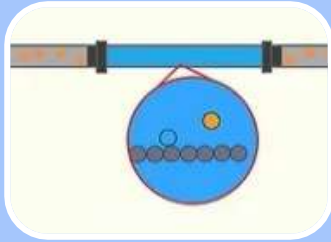
High-performance liquid chromatography (HPLC) is an analytical technique to separate, identify, and quantify components in a mixture. It is the single biggest chromatography technique essential to most laboratories worldwide.



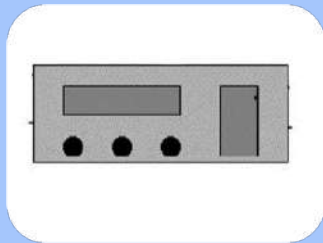
Structure of HPLC



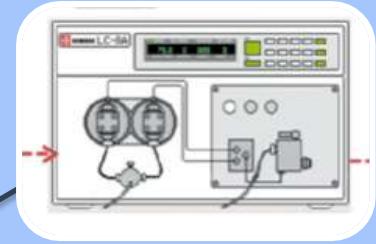
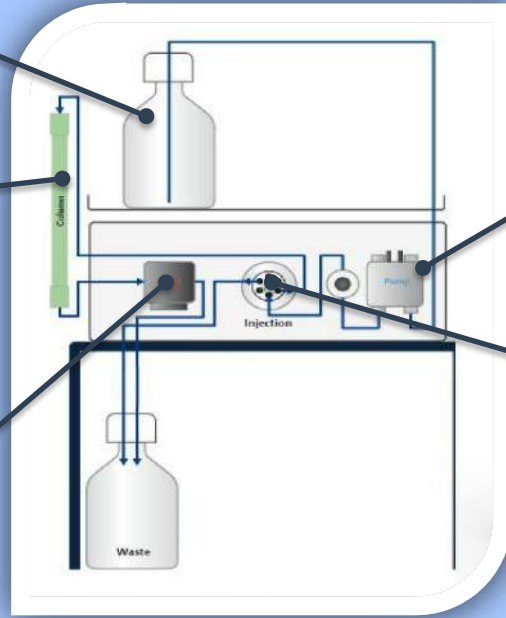
Solvents (mobile phase)



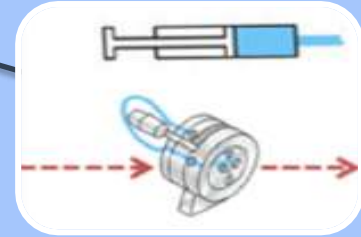
Column



Detector



Pump



injection





Types of HPLC techniques

Based on modes of chromatography

Normal phase mode Reverse phase mode

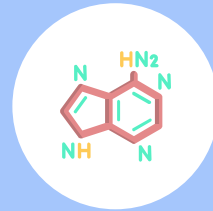


Based on elution technique

Isocratic separation Gradient separation

Based on principle of separation

Adsorption chromatography
Ion exchange chromatography
Ion pair chromatography



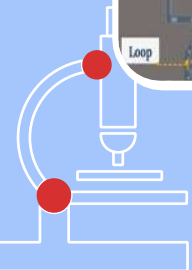
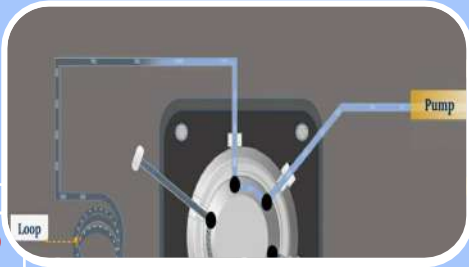
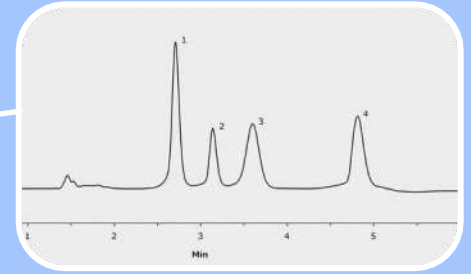
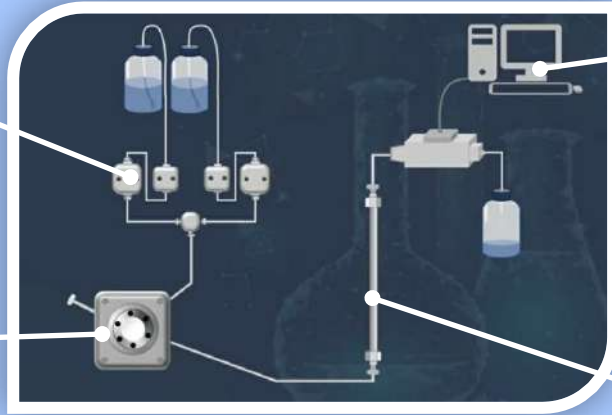
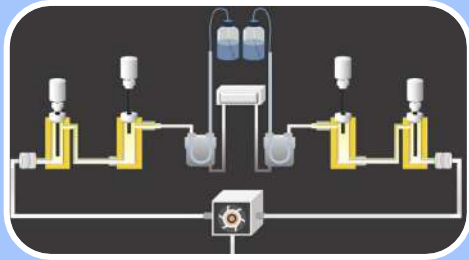
Based on the scale of operation

Analytical HPLC Preparative HPLC





Mechanism of HPLC



Uses of HPLC



1-Separation and analysis of mixed components non-volatile compounds.

2-Qualitative analysis

3-Quantitative analysis

+ 4-Preparation of Pure Compounds



Advantages and disadvantages of HPLC



Advantages:

Speed(minutes)
High resolution
Sensitivity
Accuracy
Automation

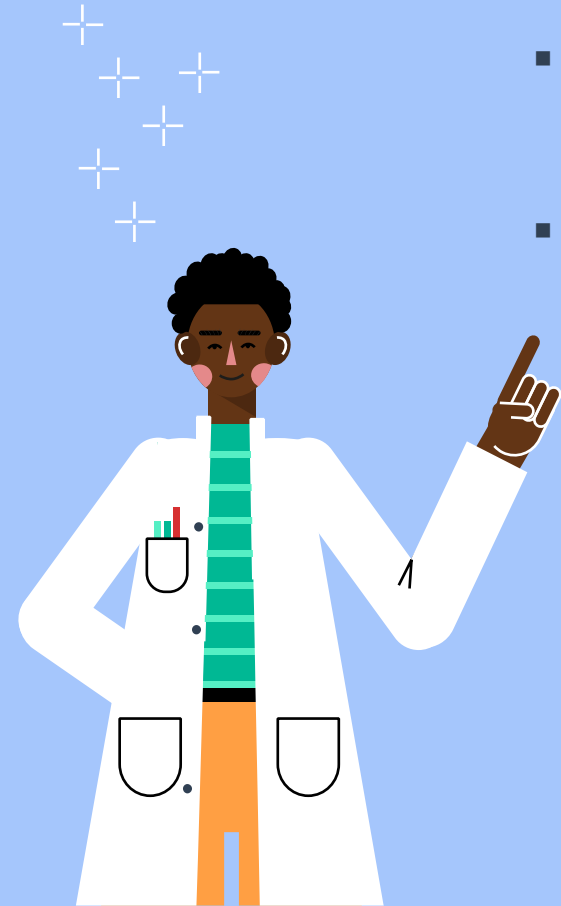
Disadvantages:

Cost
Complexity



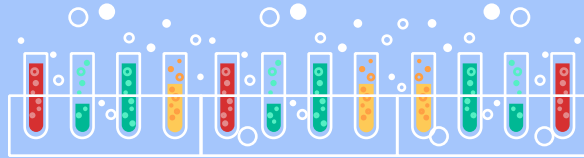
Importance of HPLC in Pharmaceuticals

- High performance liquid chromatography (HPLC) is used in the pharmaceutical and medicine manufacturing industry to test products, and the ingredients used to make them.
- This testing is often performed by a pharmaceutical company's quality control (QC) laboratory. Chemists employed by these manufacturers will run samples of raw materials or finished goods through HPLC machines and then analyze the results.”

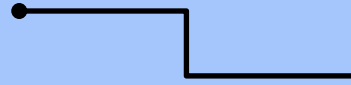


Summary

HPLC stands for high performance liquid chromatography, it is an analytical technique to separate, identify, and quantify components in a mixture. Types of HPLC based on (modes of chromatography, principle of separation, elution technique and scale of operation). HPLC has many uses. It has many advantages it has high speed, high resolution etc... but it's disadvantage is that it's expensive and complex. HPLC is also used in pharmaceuticals.



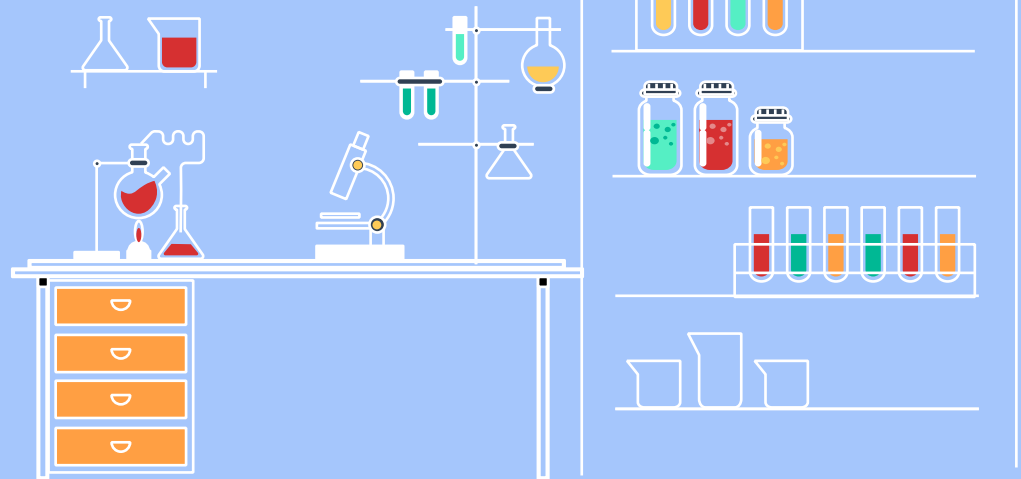
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Thank You!

Do you have any questions?

