



# Detailed Information on High-Performance Liquid Chromatography

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advancements such as high-resolution HPLC, ultra-high-performance liquid chromatography (UHPLC), and hyphenated techniques like liquid chromatography-mass spectrometry (LC-MS). These advancements have enhanced separation efficiency, sensitivity, speed, and selectivity, allowing for more complete sample analysis and improved detection limits.

### **Disadvantages of High-Performance Liquid Chromatography**

While High-Performance Liquid Chromatography (HPLC) is a widely used and powerful analytical technique, it does have certain disadvantages that researchers should consider: **Cost:** HPLC systems and the associated equipment can be expensive to purchase and maintain. The initial investment in instruments, columns, detectors, and other accessories can be substantial. Additionally, regular maintenance, calibration, and replacement of consumables can contribute to ongoing costs. **Complexity:** HPLC requires specialized knowledge and skills to operate effectively. Method development, optimization, and troubleshooting can be time-consuming and require expertise in column selection, mobile phase composition, and detector settings. **Inexperienced users may face challenges in achieving optimal separations and obtaining accurate results.** **Time-consuming:** HPLC separations can be relatively slow compared to other analytical

