

Analytical Services: Understanding HP-TLC

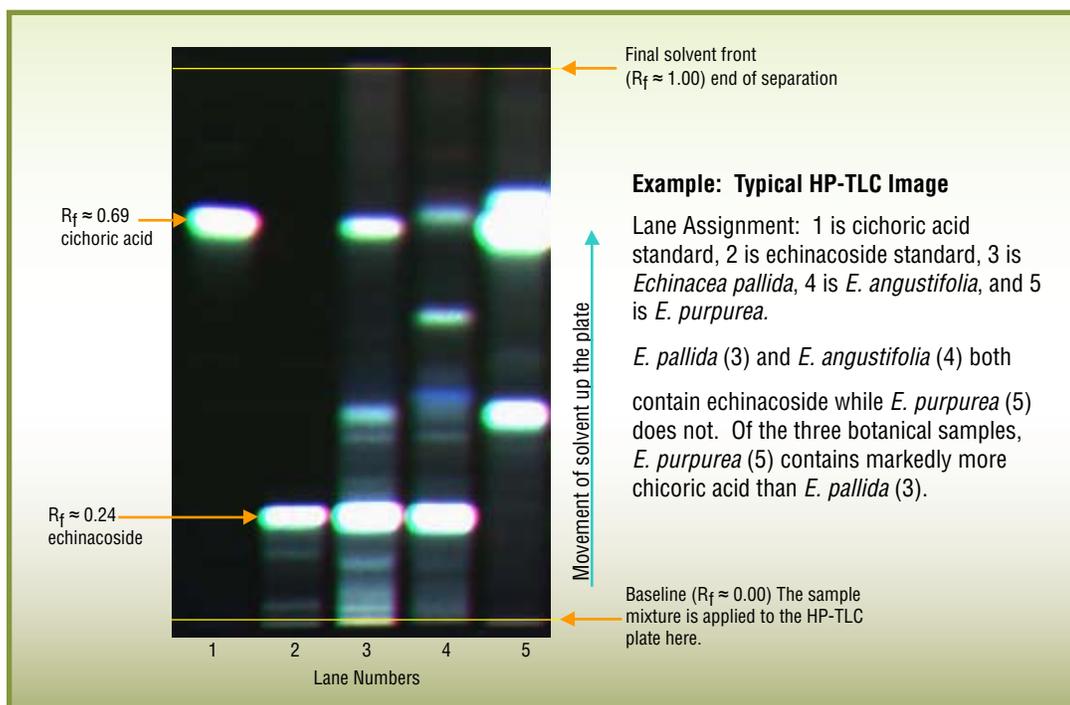
ChromaDex™ offers a rapidly expanding list of analytical services. Choosing the correct assay and report type for your needs is a crucial part of your quality control and product development systems. This document is intended to give you a brief understanding of HP-TLC assays. Please contact your ChromaDex™ Technical Sales Representative for more information on HP-TLC and assistance in choosing the best analytical testing for your application.

The Basics of HP-TLC

HP-TLC stands for High Performance-Thin Layer Chromatography. Thin Layer Chromatography (TLC) has been used for decades to analyze complex sample mixtures. In a typical HP-TLC analysis, samples are applied to one end of a silica gel plate. The end of the plate containing the samples is placed into an appropriate liquid phase solvent. The liquid is drawn up through the plate by capillary action, which in turn separates the individual components of the sample mixture.

Separation occurs when each component moves or migrates a specific distance up the plate. How far the component migrates up the HP-TLC plate is determined by the component's unique chemical properties. The migration distances (retention factor, R_f) of sample components are then compared to those of chosen reference materials and/or chemical standards. ChromaDex's™ HP-TLC test methods have been specifically developed and optimized to ensure that the individual components from each sample mixture are properly resolved.

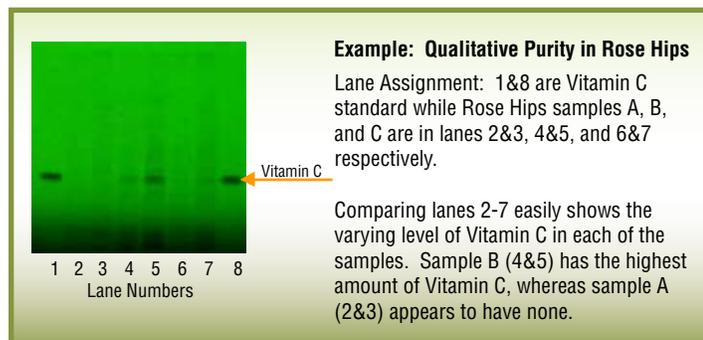
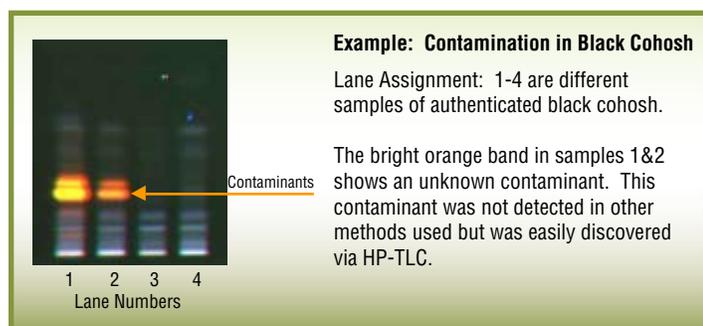
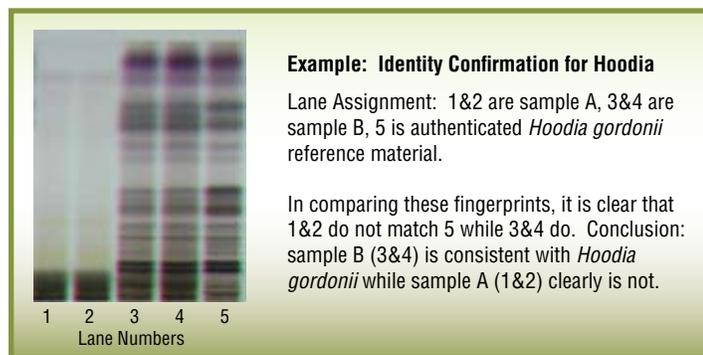
A variety of imaging techniques are used to view the final HP-TLC plate such as UV light, visible light, and special developing reagents. The resulting images of the developed HP-TLC plate are often referred to as the "fingerprint" of the sample.



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Identity Confirmation and Other Uses

Because of the complex nature of natural products, HP-TLC is extremely powerful in assessing many aspects of a sample mixture. ChromaDex's™ HP-TLC assays are the perfect choice to establish botanical identity of raw materials and finished products. They can also be used for qualitative purity testing, contamination screening, as well as stability of raw materials, extracts, and finished botanical products.



HP-TLC is a very useful tool in the analysis of natural products. Under the correct test method, the many compounds in a complex botanical sample can be separated and documented as an image. The visual data reported by HP-TLC is intuitive and easily understood regardless of one's previous scientific training. HP-TLC also offers parallel analysis of multiple samples and gathers many forms of data (identity, purity, and contamination) at the same time as shown above.

The Advantages of the ChromaDex™ Analytical Test Report

ChromaDex™ offers two reporting types for HP-TLC assays. The Analytical Test Report (ATR) is a detailed report that offers full method disclosure and complete data reporting. The ATR will include detailed HP-TLC images as well as a data analysis section giving you the most complete documentation and information on your samples.

The Analytical Results Sheet (ARS) is the basic report format and will only report a simple statement that your samples meet or do not meet identity requirements and will not include the images. The ARS provides an option for economically processing routine samples. It is suitable for established programs that have a history of positive identity verification through the more detailed Analytical Test Report (ATR).

Your ChromaDex™ Technical Sales Representative can help you choose the proper assay and report type to suit your needs. Sample HP-TLC reports are available for both the ARS and ATR types.

Utilizing HP-TLC in Your Quality Systems

Identity confirmation is a key component of any quality system and HP-TLC is the optimal way to determine identity. Botanical raw materials are often adulterated with dissimilar plants that share the same chemical marker. Therefore, the presence of a single chemical in a botanical sample does not confirm identity. Only through the full imaging of the HP-TLC fingerprint, can you be confident your raw material is what you claim.

Although it is often used for identity testing, HP-TLC is useful in many more ways. By properly integrating HP-TLC into your quality systems, you can optimize your product quality and performance as well as substantiate marketing and labeling claims. Best practices include screening all raw materials and finished product batches by HP-TLC.

- Verify identity of all incoming raw material lots
- Identify adulterated raw material batches
- Use as initial screening to correctly plan further analytical testing
- Avoid unnecessary quantitative purity tests
- Screen raw materials and finished products for possible contamination
- Easily compare multiple lots side by side to troubleshoot quality and production issues
- Perform stability testing of raw materials and finished products
- Require ChromaDex™ reports from your raw material suppliers prior to purchase

Contact your ChromaDex™ Technical Sales Representative on how we can help you establish and implement your quality systems.