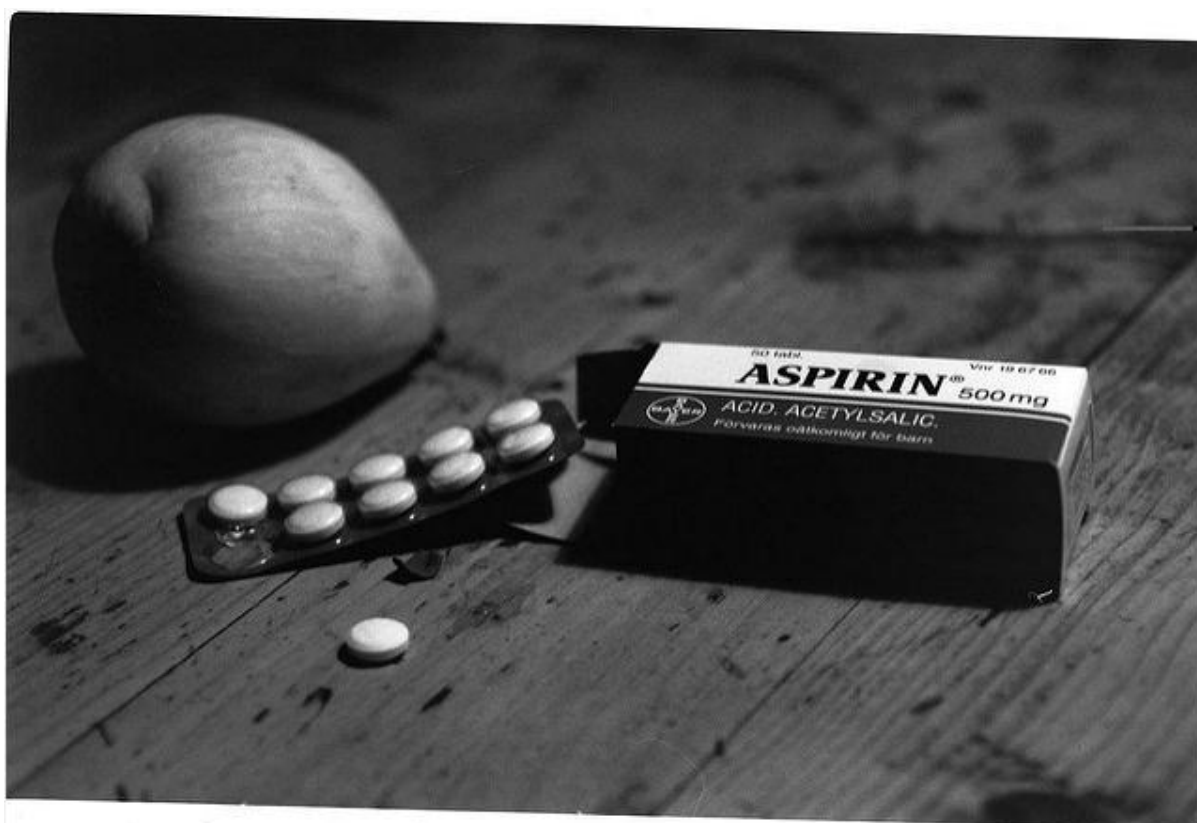


The kids are out of school for the summer, which for many parents—myself included—means longer days, later nights, and a louder environment overall. Whether from lack of sleep, too much sun, or too much fun, I found myself battling a raging headache by the end of last week. Stranded at the park with nothing but a cheap first aid kit in tote, I desperately tore open the tiny package of aspirin that was buried at the bottom.

Pain relief medications line drug store shelves, yet a formula that was developed over 100 years ago continues to lead the industry and be a mainstay in medicine cabinets and first aid kits in homes everywhere: aspirin. The drug of choice in my recent fight with a headache, it's as effective as the alternative choices people turn to when in need of relief. The truth is that aspirin is used daily for pain relief, as well as to treat other ailments that plague individuals. That is why the need for quality aspirin products are still in high demand.



Concentration and purity are both important factors in the development of quality pharmaceutical products as well as common over the counter medications.

Image Source: Flickr user Staffan Enbom

The Role of Spectral Analysis In Aspirin Production

Spectral analysis plays an important role in the production of aspirin. This simple and effective form of laboratory testing provides valuable data that is required for maintaining the quality and purity of this widely used pharmaceutical. Although other testing methods are available, spectrophotometers offer the most versatile options in pharmaceutical testing and monitoring.

Aspirin, also referred to as acetylsalicylic acid, is one of the most common synthetic medications found on the market today.¹ Whether used as a simple remedy for pain and inflammation or as an effective method for treating cardiovascular disease, the demand for this product is continually increasing. Not only is quality testing a concern, but more [stringent pharmaceutical](#)

[regulations](#) continue to force drug manufacturers to take a closer look at their laboratory testing and quality control procedures.

Effectively Determining Concentration with Spectrophotometry

One of the first and most important steps in developing pharmaceutical quality and effectiveness is determining the concentration levels of API (active pharmaceutical ingredient). Many commercial aspirin products have relied primarily on the acid/base titration method in the past to determine API content², but spectral analysis has taken the spotlight as an alternative method that offers both efficient and reliable data.



Maintaining consistency from batch to batch is essential for developing a reliable and effective product.

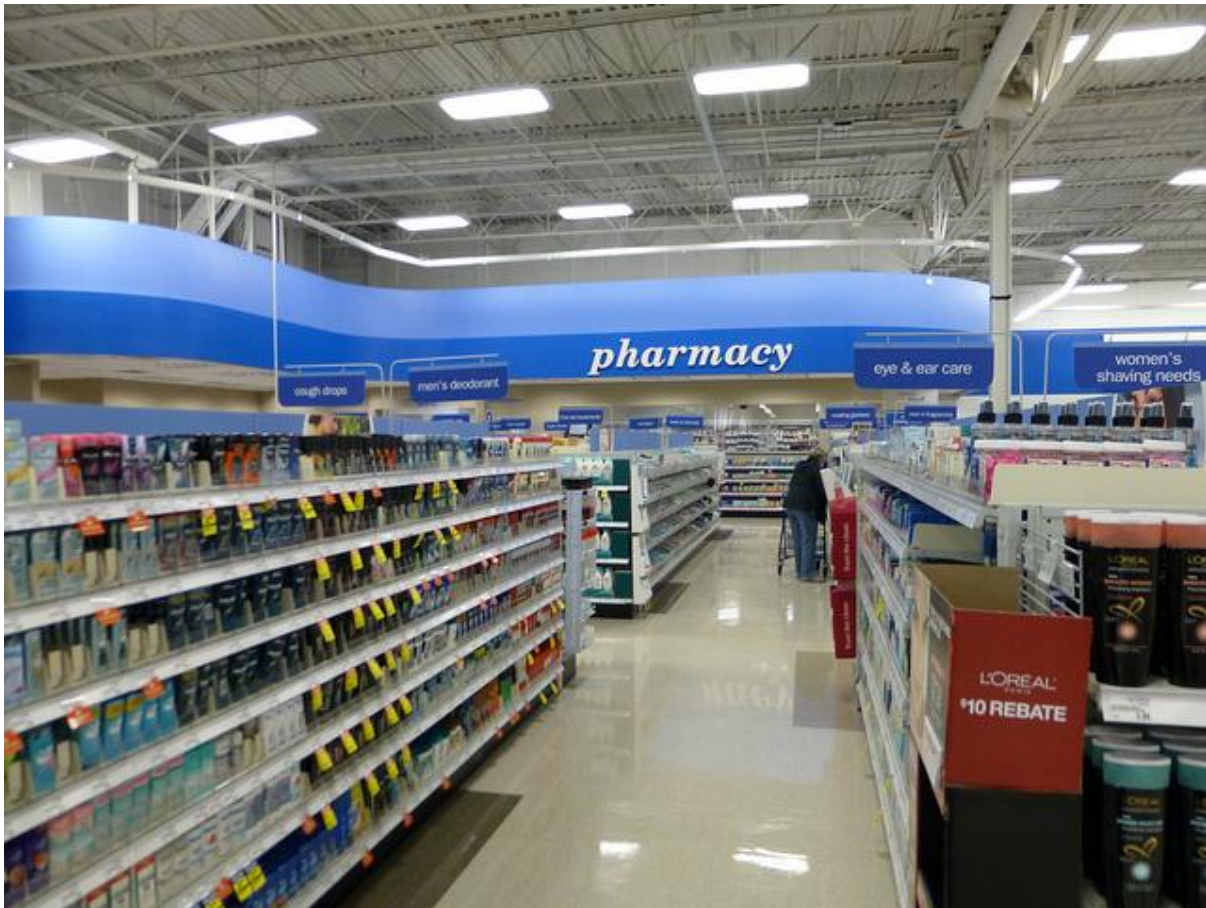
Image Source: Flickr user Mike Steele

After acidification, [UV and visible wavelength spectrophotometers can be used to measure light absorption](#) in a sample. These results give a highly accurate and quantifiable concentration levels of aspirin content, which can be represented numerically to ensure uniformity and effectiveness. These instruments offer the ability to store information and data to efficiently monitor any changes and maintain consistency from batch to batch. With user-friendly technology, spectrophotometers help to drastically reduce errors overall.

As regulations become more stringent, accurate testing and labeling are necessary to maintain product reputation and industry compliance. Spectrophotometry is a preferred method of analysis in the pharmaceutical industry because it not only offers non-destructive analysis and minimal product sample waste, but it is also affordable and reliable as well.

Other Applications of Spectral Analysis in Pharmaceuticals

Quality testing and API measurements only scratch the surface of what spectrophotometric technology can offer. This instrumentation is widely used throughout the industry to monitor color consistency, [purity](#), and stability. From [color-coding technology](#) to shelf life monitoring, spectral analysis continues to forge new frontiers in pharmaceutical testing and development. Although a variety of testing methods may be used, the use of color measurement applications is a leader in cutting edge technology in the pharmaceutical markets. This one simple tool can be used for a variety of applications and is a preferred method for maintaining product quality and safety in this industry as well as others.



Spectral analysis plays an important role in monitoring drug stability and shelf life in common over the counter medications.

Image Source: Flickr user Nicholas Eckhart

Understanding Your Options in Spectrophotometers

Like many products, not all spectrophotometers are created equal. Although the technology still relies on the same basic principles of light science that were developed years ago, many advancements have been made and new applications discovered within the past several decades. From larger bench top models to small handheld devices, spectral technology is more adaptable and affordable than ever but with so many choices available, it is hard to know which tool is right for the job. That is why HunterLab works together with industry leaders to develop specialized tools that effectively meet the needs of our customers. We understand that having the right tools is only the beginning, which is why we offer continued support to help you understand and utilize your instrumentation at its full potential. For more information on spectrophotometric applications in the pharmaceutical industry, please [contact us](#) today.

1. "Synthesis and Analysis of Acetyl Salicylic Acid," November 25, 2002,
<http://www.joshstaiger.org/amychan/Literary/Lab%20Three%20Report%20Aspirin.pdf>
2. "Analytical techniques in pharmaceutical analysis: A review," April 23, 2013,
<http://www.sciencedirect.com/science/article/pii/S1878535213001056>