Microsampling-based analysis: principles and technologies

Volumetric absorptive microsampling (VAMS) is an innovative technique that has gained attention in the field of bioanalysis. It allows the collection of blood and other biological samples for various analytical purposes. While VAMS shares similarities with the well-established dried blood spot (DBS) technique, it offers several advantages that make it a promising alternative.

One of the key advantages of VAMS is improved accuracy in sampling volume. With DBS, the volume of the collected blood sample can vary depending on factors such as the hematocrit (HCT) level, leading to potential inaccuracies in analysis. VAMS, on the other hand, overcomes this limitation by enabling consistent and precise volumetric sampling, regardless of the HCT level. This ensures more reliable and reproducible results.

Additionally, VAMS reduces the need for pre-treatment of samples. In the DBS technique, the blood spots often require additional steps such as punching, extraction, and elution to extract the analytes of interest. VAMS simplifies the process by allowing direct analysis of the absorbed sample, eliminating or minimizing the need for complex pre-treatment steps. This saves time, reduces the risk of sample contamination, and improves overall efficiency.

Although VAMS shows promise, there are still aspects that require further investigation and optimization. Researchers and scientists are actively exploring its full potential, addressing challenges and refining protocols to ensure its reliability and applicability across various analytical platforms.