

Generic methods for diuretic determination in urine using Pallas™ software—Liquid/Liquid or Solid Phase Extraction with SiliaPrep™ cartridges and HPLC analysis.

There are several classes of diuretic drugs—Thiazides and potassium sparing diuretics, carbonic anhydrase inhibitors, osmotic and mercurial diuretics. Those drugs are all relatively polar (acidic and basic functions) hence are amenable to analysis by HPLC using C18 type phases with diode array, fluorescence, or mass spectrometry detector. However, whilst this method may be suitable for screening purposes it suffers from significant interferences due to the background occurring in biological samples. The information provided is insufficient for confirmation and alternative mass spectral confirmation of identity is needed for doping control. The wide variety of diuretics and their heterogeneous chemical structures and physicochemical properties have proven to complicate the development of method extraction and capacious screening procedures for doping control purposes.

In order to improve the limit of detection of targeted diuretics, the extraction methods need to be precisely determined based on the molecular structure of each one. By using some tools such as pKa and solubility, these limits can be overcome. The Pallas™ software generates some guidelines regarding the best appropriate approach to isolate diuretic drugs without interferences with detection system and HPLC conditions as well. This paper will present some pathways for method extraction of diuretics by SPE with SiliaPrep™ cartridges or Liquid/Liquid extraction according to Log D curve from Pallas™ calculations. The prediction values from Pallas™ are then verified for some diuretics in urine matrices.