

Automated SPE option for the MultiPurpose Sampler (MPS) based on standard SPE cartridges

Analyzing Chloramphenicol in half the time normally required

As many users will tell you, performing manual Solid Phase Extraction (SPE) requires a lot of time - and strong nerves when insufficient recovery and bad reproducibility are experienced. It can be hard to discern what went wrong: Was conditioning adequate? Did the cartridge run dry in an unguarded moment? Was the eluent flow rate too high? Did cartridges get mixed up? If only cartridges could speak to us. If the SPE process can be reliably automated, such questions will not arise in the first place. The automated GERSTEL SPE System is based on standard cartridges making it easy to transfer and automate existing methods. Fully automated liquid handling and exact timing of all processes make SPE a more relaxing and much more efficient activity.

The antibiotic Chloramphenicol (CAP) is banned for use in food products of animal origin such as meat and fish that are imported to Europe. CAP is a known human carcinogenic, suspected of causing genetic damage in human cells as well as irreversible damage to the blood-forming cells of the bone marrow.

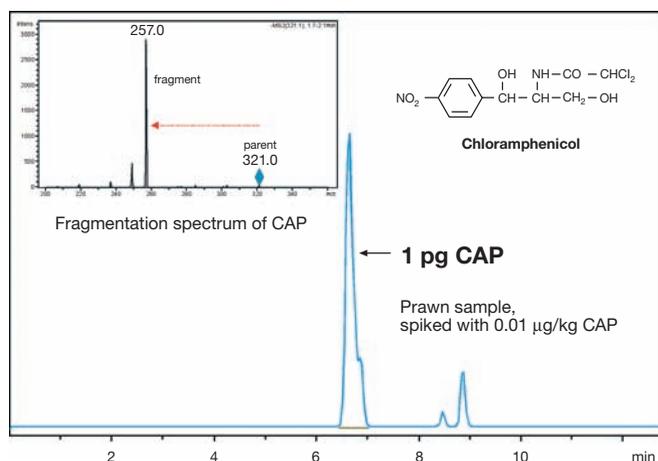


The determination of CAP is usually performed by LC/MS. The sensitivity of the method depends greatly on sample preparation. A high matrix load can result in incorrect quantification of CAP even when highly selective LC-MS/MS methods are used. The same is the case for many other analytes in the areas of food, pharmaceutical or environmental analysis.

SPE is the sample preparation technique of choice for many samples, separating analytes from the matrix prior to LC or GC determination. Manual SPE methods have serious drawbacks. A lot of time and patience is needed, recovery and reproducibility can be subject to extreme deviations. This largely depends on the experience of the user and on how meticulously each step is performed. If the SPE process and all associated liquid handling steps are automated, the process becomes much more reliable and efficient.

A GERSTEL MPS with Automated SPE Option coupled to an LC/MS system was used for the determination of chloramphenicol (CAP) in food products of animal origin. Manual SPE using standard cartridges can provide good results under tightly controlled conditions.

MPS with the Automated SPE Option provides slightly better results than manual SPE performed by an experienced and diligent technician. For CAP determinations

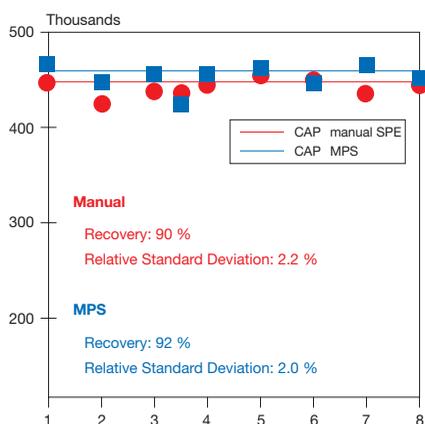


Chromatogram of transfer 321.0 – 257.0; detection of a CAP residue of 0.01 µg/kg in a prawn sample following automated SPE on the GERSTEL MultiPurpose Sampler MPS 2.

using the MPS, standard deviations were 2.0 % compared with 2.2 % for manual SPE. The recovery was 92 % on the MPS compared with 90 % for manual SPE. The MPS provided slight, but clear improvements over the best achievable manual results and, more importantly, a big improvement in productivity.

Further information:

www.gerstel.com (application note 7/2006)



Recovery and reproducibility of chloramphenicol determination in prawn meat with manual and automated sample preparation, respectively.