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Titel des Beitrags: Mass spectrometric profiling of Bacillus cereus strains and quantitation of the emetic toxin cereulide by means of stable isotope dilution analysis and HEp-2 bioassay

Abstract: A fast and robust high-throughput ultra-performance liquid chromatography/time-of-flight mass spectrometry (UPLC-TOF MS) profiling method was developed and successfully applied to discriminate a total of 78 Bacillus cereus strains into no/low, medium and high producers of the emetic toxin cereulide. The data obtained by UPLC-TOF MS profiling were confirmed by absolute quantitation of cereulide in selected samples by means of high-performance liquid chromatography with tandem mass spectrometry (HPLC-MS/MS) and stable isotope dilution assay (SIDA). Interestingly, the B. cereus strains isolated from four vomit samples and five faeces samples from patients showing symptoms of intoxication were among the group of medium or high producers. Comparison of HEp-2 bioassay data with those determined by means of mass spectrometry showed differences, most likely because the HEp-2 bioassay is based on the toxic action of cereulide towards mitochondria of eukaryotic cells rather than on a direct measurement of the toxin. In conclusion, the UPLC-electrospray ionization (ESI)-TOF MS and the HPLC-ESI-MS/MS-SIDA analyses seem to be promising tools for the robust high-throughput analysis of cereulide in B. cereus cultures, foods...
and other biological samples.