190. Title: Assessment of terahertz spectroscopy to detect antibiotic residues in food and feed matrices

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Abstract: We report the use of terahertz (THz) spectroscopy to explore the spectral properties of eleven antibiotics commonly used in livestock production. Eight of the eleven antibiotics showed specific fingerprints in the frequency range between 0.1 and 2 THz. The main spectral features of two antibiotics (doxycycline and sulfapyridine) were still detectable when they were mixed with three food matrices (feed, milk, and egg powder). These preliminary results indicate that THz spectroscopy could be suitable for screening applications to detect the presence of antibiotic residues in the food industry, with the prospect to allow inspections directly on the production lines. THz spectroscopy is a nondestructive, non-contact, and real-time technique that requires very little sample preparation. Moreover, THz radiation can penetrate plastic and paper, which enables the detection of antibiotics in packaged food.