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## **Detection of Ochratoxin A in Wheat using Near- Infrared Hyperspectral Imaging**

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**ABSTRACT** Ochratoxin A (OTA) is a toxin produced by the fungus *Penicillium verrucosum* in cereal grains. Ochratoxin A is potentially carcinogenic, immunosuppressive, hepatotoxic, mutagenic, nephrotoxic, and teratogenic. The detection of contaminated grains as rapidly as possible and with high accuracy is very important to avoid potential food safety issues. A near-infrared hyperspectral imaging system has the potential to differentiate the OTA contaminated grains from healthy grains within a short period of time. The Canada Western Red Spring wheat grains were artificially contaminated by *P. verrucosum* and analyzed for OTA. Then two different levels of OTA and OTA-free kernels were chosen and subjected to single-kernel imaging using a near-infrared camera in the wavelength range of 1000 to 1600 nm at 60 wavelengths spaced 10 nm apart. The statistical features from the images were obtained using a code written in MATLAB and were classified using linear and quadratic statistical classifiers. The classifiers provided a maximum classification accuracy of 99% for healthy vs. OTA contaminated samples and a misclassification of 20 % for the two levels of OTA contaminated samples.

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