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Rapid screening technique to determine authenticity and adulteration of herbs and spices



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Food fraud is a subject which has become increasingly prominent over recent years and is sometimes referred to as economically motivated adulteration (EMA). Compared with the often trace levels involved in accidental contamination, adulterants are usually added in substantial quantities in order to ensure greatest profit gain. Herb and spice trading incorporates a wide range of products from diverse origins around the globe, with some countries at higher risk of EMA. Adulterants, anything from cheaper plant material of similar appearance, to natural and synthetic dyes, to chemicals such as talc, not only negatively impact consumer confidence, but can also be detrimental to public health. Near-Infrared (NIR) spectroscopy is an already widely used technique in the food industry for quantitative analysis of nutritional and quality parameters. For dried materials like herbs and spices, NIR spectroscopy is the ideal solution as it is a non-destructive technique and requires no sample preparation, allowing the analyzed samples to be retained. Existing targeted approaches for adulterant screening require a quantitative calibration to be developed for each potential adulterant. Non-targeted screening approaches can determine when there is a potential adulteration problem but can neither identify nor quantify the adulterant. Adulterant Screen™, a semi-targeted screening method, combines the advantages of both targeted and non-targeted approaches, allowing easy detection and quantitative estimation of adulteration at relevant levels. A range of examples of herb and spice adulteration studies using NIR spectroscopy demonstrates the use of adulterant screening as a rapid screening method for suspect materials.

Biography

Kathryn Lawson-Wood is an Infrared Technical Applications Scientist at PerkinElmer and re-joined the organization in July 2017. Prior to this, she studied for a BSc (Hons) in Chemistry from the University of Surrey with an industrial placement year at PerkinElmer. Her role involved in the research include design and execution of application notes to demonstrate solutions for emerging food and environmental issues, with focus primarily on food packaging analysis and authenticity of herbs and spices.

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