

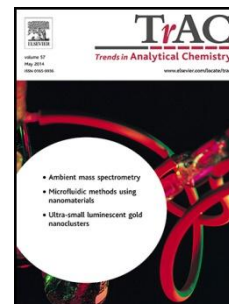
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Title: Analytical strategies for the early quality and safety assurance in the global feed chain: Approaches for nitrogen adulterants in soybean meal and mineral and transformer oils in vegetable oils

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Title: Analytical strategies for the early quality and safety assurance in the global feed chain

Subtitle: Approaches for nitrogen adulterants in soybean meal and mineral and transformer oils in vegetable oils

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Highlights

- For screening, spectroscopic methods (NIRS and Raman) are the methods of choice
- NIRS and Raman can be applied on-site and on-line at the feed mill or port of entry
- Post-screening and confirmation should be performed with MS-based methods
- All techniques have the potential to be applied in non-targeted approaches

Abstract

In the past decade, several major food safety crises originated from problems with feed. Consequently, there is an urgent need for early detection of fraudulent adulteration and contamination in the feed chain. Strategies are presented for two specific cases, viz. adulterations of (i) soybean meal with melamine and other types of adulterants/contaminants and (ii) vegetable oils with mineral oil, transformer oil or other oils. These strategies comprise screening at the feed mill or port of entry with non-destructive spectroscopic methods (NIRS and Raman), followed by post-screening and confirmation in the laboratory with MS-based methods. The spectroscopic techniques are suitable for on-site and on-line applications. Currently they are suited to detect fraudulent adulteration at relatively high levels but not to detect low level contamination. The potential use of the strategies for non-targeted analysis is demonstrated.

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