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Identification of DDGs origin by ATR-FTIR spectroscopy after in situ fat extraction

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Abstract The ban for using processed animal protein in the feeding stuffs led the feed sector to prospect other possible protein sources. Among the different possibilities and beside the soybean meal which is the main source of proteins for feed, Dried Distillers Grains with Solubles (DDGs) could be also considered as an important source to take into account. In USA, 30% of the corn is dedicated to ethanol production and the DDGS obtained as residue of the process are largely exported to Europe. The possible use of antibiotics or fermentation supplements to improve the ethanol production process involves some risks in the feed chain.



The current work, performed in the framework of the QSAFFE project (<http://www.qsaffe.eu>), aims to identify the botanical, geographical and process origin of DDGs using Attenuated Total Reflection Fourier Transform Infrared Spectroscopy (ATR-FTIR). For this, 69 samples of DDGs derived from corn, wheat or mixtures thereof, mainly from USA and China but also Europe and produced in beverage or bio ethanol production, were collected and analysed. ATR-FTIR spectra of DDGS material were acquired using a Bruker Vertex 70 Fourier Transform spectrometer. Samples were spread and measured either, directly on the powder after pressing the sample on the crystal with constant pressure either, directly on the fat after extracting fat in situ using a paper filter on the crystal with press during 3 min.

This work presents the first results achieved to discriminate the botanical, the country and the process origin using the ATR-FTIR methodology combined with chemometric tools.

Keywords feed;DDGs;ATR-FTIR;traceability;QSaffe

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