New Approaches to Authenticating Food: An Overview

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Food fraud continues to have a high profile with several major incidents being reported in the press and media, such fraud is not a new issue however, with cases of adulteration being reported in Roman times. What has changed considerably over the last 20 years is the main target of the fraud. Until the demise of the Common Agriculture Policy (CAP), the primary focus of European anti-fraud resources was on protecting the European Commission and Member States from frauds that exploited the complexities of subsidy and tariffs that existed within the CAP. Recently there has been an increased emphasis from the food industry on marketing of foods with perceived food quality attributes to an ever more discerning European consumer. Many of these perceived quality attributes cannot easily be verified using current analytical methods. As a result, food control authorities face considerable challenges in verifying labelling descriptions that relate to: provenance, organic, fair trade, food miles, sustainability. The lack of objective methods for verifying labelling claims is to the detriment of the consumer but also the food industry, as the honest producer is not protected nor the purchasers of such products in the food chain.

Analytical methods for use in detecting food fraud usually rely on detecting/quantifying marker(s) of the authentic product or more commonly detecting/quantifying markers of the adulterant. The complexity of the methodology usually depends on the nature of the difference between the authentic product and the adulterant as well as whether the product has been completely replaced or extended. Determining geographical origin requires sophisticated methodology to identify and measure markers in the food that can be related to the food's local environment. The markers are often complex and rely on chemometrics to provide interpretation. New approaches developed within the TRACE project such as metabolite profiling methods and isotopic food maps, will be presented together with some of the more elegant solutions that have already been devised to authenticate food.