Validation of methods for the detection and quantification of engineered nanoparticles in food - DTU Orbit (06/12/2018)

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The potential impact of nanomaterials on the environment and on human health has already triggered legislation requiring labelling of products containing nanoparticles. However, so far, no validated analytical methods for the implementation of this legislation exist. This paper outlines a generic approach for the validation of methods for detection and quantification of nanoparticles in food samples. It proposes validation of identity, selectivity, precision, working range, limit of detection and robustness, bearing in mind that each "result" must include information about the chemical identity, particle size and mass or particle number concentration. This has an impact on testing for selectivity and trueness, which also must take these aspects into consideration. Selectivity must not only be tested against matrix constituents and other nanoparticles, but it shall also be tested whether the methods apply equally well to particles of different suppliers. In trueness testing, information whether the particle size distribution has changed during analysis is required. Results are largely expected to follow normal distributions due to the expected high number of particles. An approach of estimating measurement uncertainties from the validation data is given.

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