

## **Recipe composition data: Calculation procedure can be considered a valid alternative to chemical analysis for all nutrients?**

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### **Abstract**

To produce data for food composition tables and databases, because of expensive and time consuming analyses, data on nutrient content of cooked composite dishes are often calculated from ingredients. Furthermore the abundance and the variability of food composing the Italian diet, increase the difficulty to analyze most of the Italian recipes. The commonly used calculation method is a procedure that applies a yield factor (WYFs) at the recipe level and the retention factors (NRFs) at the ingredient level; this procedure has been investigated and validated under European Food Information Resource (EuroFIR) (Reinivuo et al., 2009). The aim of the study was to validate the calculated composition data through a comparison with analytical data in 12 frequently consumed Italian traditional dishes and, the same time, to verify if the calculation method leads to a reliable estimation of macro and micro nutrients values. The selected Italian dishes were: Tomato sauce, Pesto sauce, Bolognese sauce, Pasta and beans, Parmesan risotto, Pizza Napoletana Margherita, Italian omelet, Turkey escalope, Braised beef with Barolo wine, Vicentina cod, Castagnaccio, Cannoli Siciliani. Every recipe was prepared according to traditional cooking techniques in a test kitchen following standardized protocols (recipe and preparation) and nutrients analyses (proximate, minerals, vitamins) were carried out by the official methods for each composite dish; procedural steps for calculating nutrient contents of recipes were performed by a computerized program using WYFs and NRFs primarily on Italian food composition data. The results of the computed nutrients show a satisfactory degree of agreement for protein contents, less for lipids.

## **Validation of isotopic and elemental analyses of hard cheeses for origin traceability: international collaborative study**

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### **Abstract**

In compliance with the European law (EC N. 510/2006), geographical indications and designations of origin for agricultural products and foodstuffs must be protected against mislabelling. This is particularly important for Protection Denomination of Origin (PDO) hard cheeses, as Grana Padano and Parmigiano Reggiano, that can cost up to the double of the no-PDO competitors. A recent paper showed as Random Forests statistical models, based on isotopic and elemental composition, can trace the origin of 9 European and 2 extra-European cheeses in grated and shredded forms, for which it is not possible to check the logo fire-marked on the rind (Camin et al., 2012). The most significant variables for cheese traceability common in both models are  $\delta^{13}\text{C}$ ,  $\delta^2\text{H}$ ,  $\delta^{15}\text{N}$ ,  $\delta^{34}\text{S}$  and Sr, Cu, Mo, Re, Na, U, Bi, Ni, Fe, Mn, Ga, Se, and Li. This work presents the results of an international collaborative study on the validation of isotopic and elemental analytical procedures organized in order to support their recognition as official methods, for establishing the authenticity of PDO cheeses. The collaborative study has been performed according to the IUPAC protocol and the ISO Standards 5725/2004 e 13528/2005.