

## Nutritional critical points of the cook & chill system and development of corrective actions tools

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### Background:

In Italy almost one in 10 people eat a meal in collective catering (CC) every day.

The WHO and FAO emphasize the need to guarantee adequate amounts of antioxidants and protective phytochemicals, essential for the many metabolic functions, by intake of minimally processed foods. It is strategic to ensure protective meals for all CC users, especially hospital patients and the elderly. Recently the Public Procurement (PP) have more often chosen Cook & Chill (C&C) systems, characterized by the administration of meals stored between 0 and +3 C ° for 20 - 30 days. The aims of the project were to: evaluate the qualitative - quantitative profile of the effective protective molecules in C&C meals, determine any nutritional critical points (NCPs) - corrective actions (CAs) of C&C, identify rapid and cheap methods for monitoring the nutritional quality of meals and identify portable systems easy to use by non-professional operators in the chemical-analytical sector.

**Methods:**

The NACCP process indicated by the Ministry of Health has been applied. In 2019 over 120 foods collected at different stages of the production of a C&C were sampled. The University of Trieste has performed over 850 analyses. The outcomes were compared with the food composition database by the agency of the Ministry of Agriculture (MA).

**Results:**

The quantitative profile of the protective molecules present in C&C meals was in many cases reduced by 15 to 75% compared to the MA database. The protective capacity of some meals administered is comparable to that of ultra-processed food. The NCPs - CAs have been determined to ensure an adequate content of protective compounds in C&C meals. Rapid screening systems with chromatographic and optical techniques were identified. Portable systems with immediate analytical response will be developed.

**Conclusions:**

The results of the project can significantly orient PP towards choices that: adhere to the WHO recommendations and adopt nutritional quality monitoring tools.

**Key messages:**

- Include nutritional quality criteria for choosing collective catering systems.
- Monitor the nutritional quality of collective catering through rapid screening systems.