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

The Local Health Agency of Trieste integrated with Trieste University - Faculty of Medicine

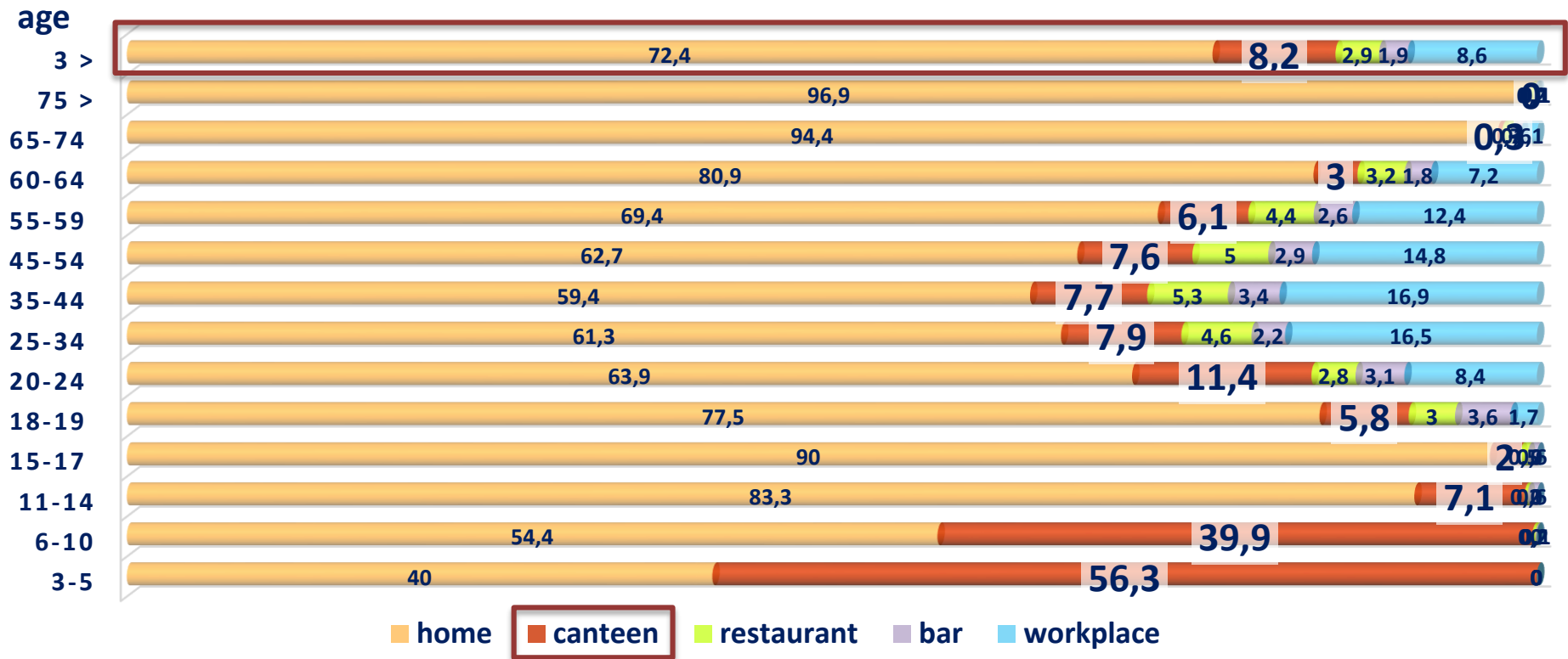
The Department of Prevention - Food and nutrition hygiene service

and Trieste University - Department of Economics, Business, Mathematical and Statistical Science * - Department of Chemical and Pharmaceutical Sciences**, Italy

G. Barocco, M. Cella, T. Longo, A. Pernarcic, P. Bogoni*, A. Calabretti**

Background

People aged 3 and more years, lunch consumption setting % (2019)
In Italy, 5 million people eat lunch in collective catering every day



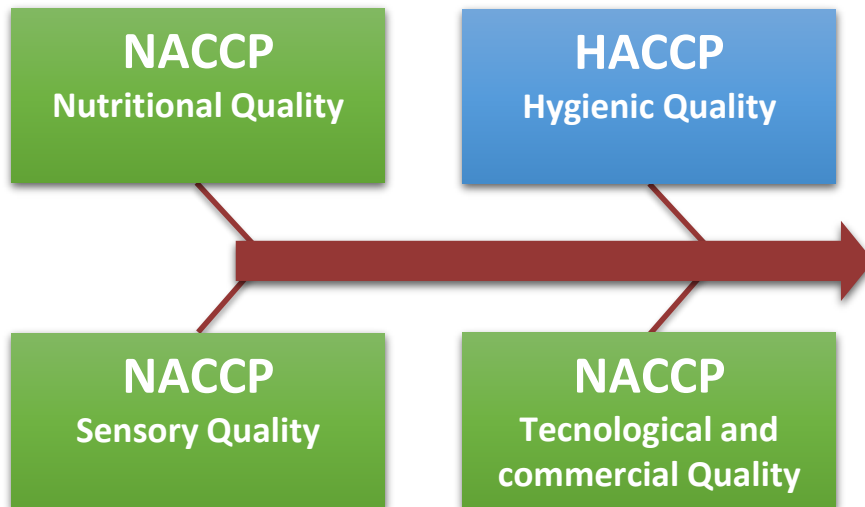
Source : ISTAT (2020) Aspetti della vita quotidiana

Aims

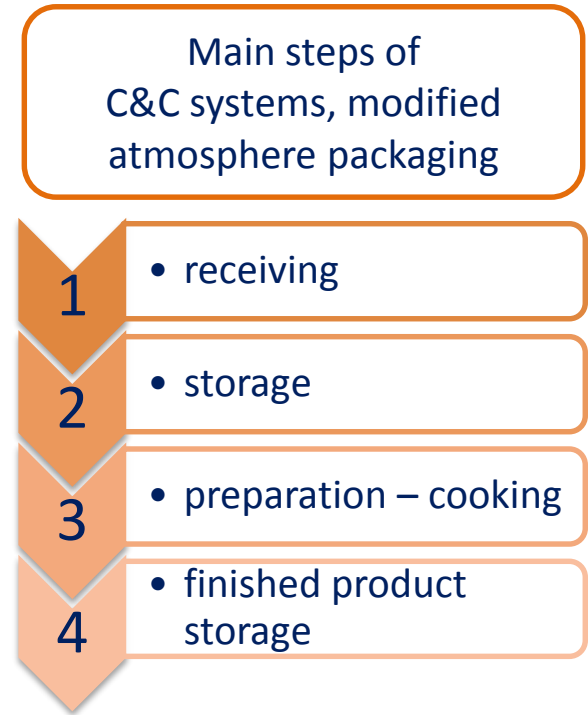
- evaluate the qualitative - quantitative profile of the effective protective molecules in Cook & Chill (C&C) meals;
- determine Nutritional Critical Points and Corrective Actions of C&C;
- identify rapid and cheap methods for monitoring the nutritional quality of meals and identify portable systems easy to use by non-professional operators in the chemical-analytical sector.

Method

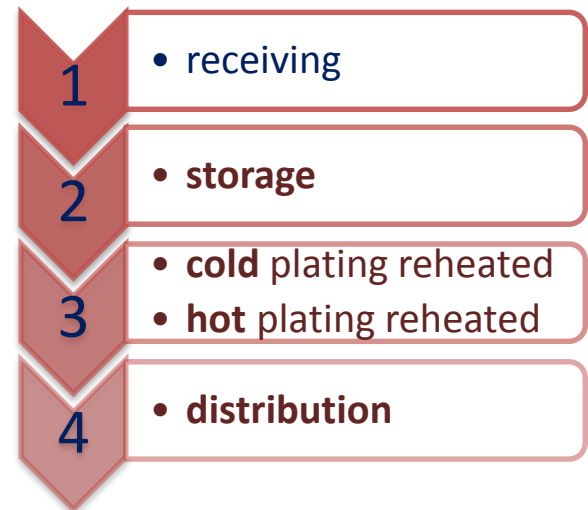
- Nutrient hazard Analysis and Critical Control Points (NACCPs), indicated by the Ministry of Health;
- in 2018 and 2019 respectively 70 and 120 foods collected at different stages of a C&C internal unit production were sampled;
- over 1350 analyses performed, in particular: total antiradicalic power, as the total antioxidant activity of vitamins and polyphenols; lipid and protein degradation compounds; and some vitamin compounds;
- references from the food composition database by the CREA Agency of the Ministry of Agriculture.



External central production

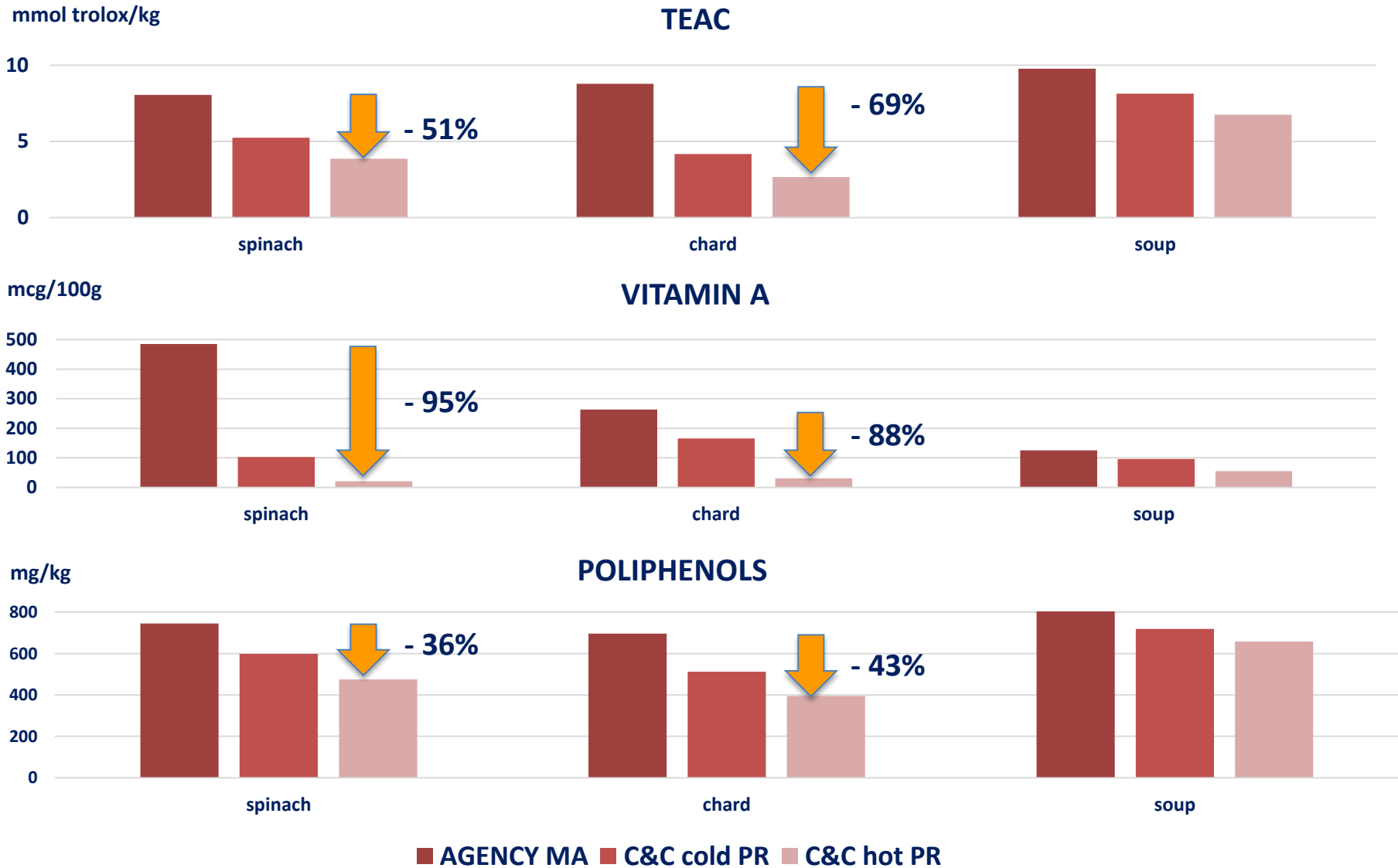


Internal unit production



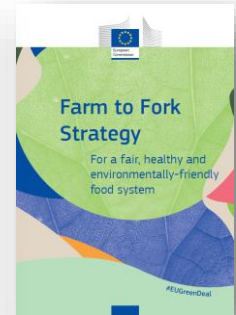
Analytical results

The quantitative profile of the protective molecules present in Cook & Chill meals was in many cases reduced by 15 to 75% compared to the CREA Agency of the Ministry of Agriculture database.



Other results

1. Nutritional Critical Points of Cook & Chill are represented by:
 - prolonged cold storage up to 30 days;
 - prolonged Hot plating reheated process (4 hours);
2. Corrective Actions:
 - limit the storage time of finished products to 5 days;
 - use exclusively the cold plating reheated process;
3. rapid screening systems with chromatographic and optical techniques were identified;
4. a new project for portable systems with immediate analytical responses are being developed in collective catering workplace settings.



Conclusions

The results of the project can significantly orient Public Procurement towards choices that:

1. adhere to the WHO, FAO, UE recommendations;
2. and adopt nutritional quality monitoring tools.