

## Food quality and health

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Food and nutrition have profound impact on health, risk of chronic diseases and longevity in people and pets. Food quality can be defined as the degree of excellence of several food properties including taste, appearance, nutritional quality, bacteriological or keeping quality. The presentation focuses on the nutritional quality of food, which is the key component of food quality, impacting health and longevity in people and pets. Diets with foods with high nutritional quality, such as Mediterranean and Okinawan diets, promote health and longevity and reduce risk of chronic diseases. Foods with high nutritional quality should contain optimal levels of essential nutrients including essential fatty acids, essential amino acids, vitamins, minerals, fibers and bioactives which are critical for maintaining health, reducing risk of chronic diseases and promoting longevity in people and pets. On the other hand, foods with low nutritional quality, such as fast foods, some ready-to-eat foods and processed foods are high in caloric contents, but low or deficient in essential nutrients. Foods with low nutritional quality may contribute to the increased risk of obesity and many other chronic diseases when consumed on regular basis and in excessive amount. Therefore, more efforts should be made to develop processed foods and ready-to-eat foods and meals with high nutritional quality, especially in fast food category for people.

Food choices made by consumers have a major effect on health and wellbeing, and the importance of a balanced diet is well-known. Apart from their energy and nutrients, food products should also be evaluated for safety, sustainability and impact on the environment, which in turn may affect human societies and wellbeing (FAO 2013; Ioannidis 2013). Taking into consideration all these aspects may lead to an innovative and virtuous “holistic” model of food production and distribution.

When it comes to sustainability, a potentially ideal model should include a short food chain, easy traceability, feasibility and finalization, in terms of advantage for all potential stakeholders (Food Chain Evaluation Consortium 2014). This last step may require functional properties definition of a specific food product towards consumers on one side, as well as a positive economic impact on the producers on the other. The development and exploitation of this type of model could be of particular interest for settings and institutions laying within the framework of health and healthcare.

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The Fondazione IRCCS Ca' Granda Ospedale Maggiore Policlinico (the Hospital from now on) is a five-century old Institution taking care of sick people in Milan. Through its history, the Hospital has become a widespread entity, mainly thanks to bequests from donors, inclusive of fields and farming houses. In September 2014, the Fondazione Sviluppo Ca' Granda (the Foundation from now on) was established in order to handle the assets and to promote Hospital scientific research thanks to the conferred agricultural heritage.

Within this context, the aim of the present report was to evaluate three food products (milk and two rice varieties) grown and produced within the Foundation's estate and characterised by a very short food chain. The three products have been evaluated in terms of nutritional composition and functional effects in humans (for rice), keeping into account for the global cost/benefit balance. When standardized, this model could represent a reference for other similar institutions and settings. The Arborio rice is cultivated and treated at the Azienda Agricola Corte Grande, located in Linarolo (Pavia). The Carnaroli variety is produced at the Azienda Agricola Forni Francesco, Cascina Lasso, Morimondo (Milan). Cows are raised at the Azienda Agricola Cazzalini, Morimondo (Milan). The cooperative “Latte Varese”, where the milk is pasteurized, is in Varese (Varese). All these locations are placed within 40 km from Milan Downtown.

The two varieties of rice can be purchased directly at the production site, while milk is usually sold to milk processing factories that, in turn, sell it to consumers. As a new experimental step to approach consumers, from October to December 2015, these products were sold in a temporary store within the Hospital.