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Example:**MINIMALLY PROCESSED FRUIT AND VEGETABLES: METABOLIC MODIFICATIONS AND QUALITY RETENTION**

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Minimally processed fruit and vegetables are foodstuff categories quickly increasing in the European market in the last decade, matching some needs of the consumers asking for nutritional, functional and convenient foods. In fact the recommendation to consume more fresh fruit and vegetables by all the nutrition societies and public institutions. In this frame, the research is looking forward to increase the knowledge of the possibility to deliver the functionality of the natural compounds as well as some additional components. Nevertheless, the maintenance of the nutritional properties is not always well known and extension of the product's shelf-life doesn't necessarily mean a quality preservation by all point of view. In the frame work of this general viewpoint, many researches are carried out to evaluate the viability of the vegetable cells during the minimally processing and the impact of some so called mild technologies like osmotic dehydration, vacuum impregnation, low temperature air-drying, modified atmosphere packaging, High Pressure Treatments, Pulsed Electric Field and so on.

In this paper an overview of the impact of some of those technologies on the tissue and cell responses as well as the influence on quality properties modification is presented. In fact the fundamental principle to take into account to evaluate fresh-cut fruit and vegetables (FCFV) stability is that they have still metabolically active tissues and show physiological response to preparation procedures, as well as to the environment created in the package in which they are enclosed. It is worth noting that quality loss of FCFV is mainly due to physiological ageing caused by the loss of cellular compartmentalization in operations such as peeling, cutting, slicing, etc. that causes the mixing of enzymes with substrates and an overall increase of metabolic activity.

Isothermal calorimetry may provide a versatile tool to carry out fundamental metabolic studies. This technique can give further information on metabolic pathways and the efficiency of energy utilisation when metabolic heat, O₂ consumption and CO₂ production are measured simultaneously.

Furthermore, in order to complete the understanding of the effect of the processing procedures on the metabolic response of vegetable tissues and which metabolic pathways are influenced, NMR analytical metabolomic/metabonomic approach seems to be very promising. This is an omic and non-destructive technique that means it is able to observe all chemical components of the sample preserving its original structure.

The proposed metabolic multi-analytical approach could give important information on FCFV field; from a macroscopic point of view, it could contribute to gain necessary knowledge base for process development and optimisation in the industry, as well as for predicting and ensuring quality and shelf-life of FCFV.

Key words: fruit, vegetables, metabolic modification, quality