

Metabolomics in grape and wine



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Our research group at FEM is developing mass spectrometry-based tools to provide a metabolomics research nucleus for the emerging strategic area of fruit biology. In this context, the final aim of the study is to identify, measure and interpret the complex time related concentration, activity and flux of endogenous metabolites in cells, tissues, and other plant samples.

The advent of metabolomics is important in wine research since it provides new and advanced methodologies for the assessment of grape and wine quality. The quality of grapes is directly related to their metabolite content and determines their commercial value in relation to colour, flavour, fragrance, resistance to pathogens and other important attributes. Metabolomics applied to viticulture represents a way of analysing and monitoring grape metabolism, physiology, and development. Metabolomics is also an indispensable tool in terms of bridging the phenotype-genotype gap. Metabolomics applied to winemaking represents an intriguing way of analysing and understanding the complex interactions between multiple components evolving in a complex beverage such as wine.

On the other hand, the advent of metabolomics requires a new way of thinking our laboratory organisation and of planning our experiments. In this seminar we will introduce the instruments and team of the metabolomics facility at FEM, and we will discuss some of the protocols so far developed, with the aid of some examples from both published and on-going grape and wine research, including some novel results from the grape metabolome project.