

Dihydrochalcones in apple: distribution, biosynthesis and physiological relevance in plants and human nutrition

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Apple fruits are considered as high-value nutritional foods that provide unique contributions to the dietary choices of consumers and overall human health. Both, primary metabolites, such as sugars, and secondary metabolites, such as volatiles and soluble substances are contributing to the special flavor, taste and colour, and, more recently, for their association with a healthy lifestyle of apple fruits and derived products. However, the majority of metabolites are still unknown and their biological activities and biosynthesis remain to be explored.

Dihydrochalcones are one of the most abundant phenolic compounds found in apple mainly in leaves but also in fruits. Long time they were considered to be specific for the genus *Malus* but in recent years they were also found in other Rosaceae genus (*Fragaria*, *Rosa*) and outside this plant family. Beside their proposed contribution to plant defence reactions against bacterial and fungal diseases or herbivore attacks, these compounds have been receiving attention in terms of human nutrition and health due to their activity e.g. within glucose metabolism/uptake.

The germplasm collection at FEM-IASMA includes around 1100 accessions of *Malus x domestica*, 50 of hybrids and 270 wild species. In a first metabolite profiling trial selected wild species were analysed regarding their dihydrochalcone pattern. Additionally, a first putative pathway model to this group of compounds is postulated.