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Poster Communication Abstract – 1.65

BIOTECHNOLOGICAL STRATEGIES TO ENHANCE ANTIOXIDANT CAPACITY OF SWEET PEPPER

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Sweet pepper (*Capsicum annuum*) is known to have good antioxidant properties related to the content of ascorbic acid, terpenoids (mainly carotenoids) and polyphenols (such as flavonoids). These antioxidant compounds play an interesting role in the prevention and holistic therapy of chronic diseases such as neurodegenerative and inflammatory disorders, tumors and metabolic syndrome. As antioxidant compounds accumulate not only in fruits but also in leaves, pepper plants are an interesting material for the production of functional foods as well as of functional food ingredients, in order to transform waste into usable resources.

To pave the way for biotechnological approaches aimed at increasing the antioxidants capacity (AOC) in pepper, we investigated the AOC and expression patterns of key genes involved in terpenoids and flavonoids pathways in fruits of six sweet pepper cultivars/ecotypes. Subsequently, we employed two yield-enhancement strategies: elicitation and metabolic engineering.

In vitro seedlings of three pepper genotypes were elicited with different concentrations of NaCl (100, 150 and 250 mM) for 72h and the effects of the elicitor on AOC and gene expression will be discussed. Moreover, in orderto test a metabolic engineering strategy, the *FNS* gene isolated from *Matricaria recutita*, which encodes for the flavone synthase, was clonedinto the binary vector PG0029 under the control of the CaMV*35S* promoter.Friable calli obtained from leaf explants of pepper cv. Quadrato on MS30containing 1 mg/L 2.4 D were transformed with the *Agrobacterium tumefaciens*strain GV3101. The analysis of putative transgenic calli is in progress.