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Poster Communication Abstract – 1.15

UNRAVELING THE REGULATION OF FLAVONOID PRODUCTION IN GLOBE ARTICHOKE: ISOLATION AND CHARACTERIZATION OF THE FLAVONOL REGULATOR *CCMYB12*

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Flavonoids, a well-studied group of secondary metabolites, are known to exhibit health promoting effects such as antioxidant capacities, anti-cancer and anti-inflammatory activity. The globe artichoke [*Cynara cardunculus* var. *scolymus* (L.) Fiori] is a natural functional food rich in bioactive phenolic compounds, including flavonoids, and in fibers (inulin) and minerals. To study the regulation of flavonoid biosynthesis, a R2R3-MYB transcription factor, *CcMYB12*, was isolated from artichoke leaves.

Phylogenetic analysis showed that this protein belongs to the MYB subgroup 7 (flavonol-specific MYB), which includes Arabidopsis AtMYB12, grapevine VvMYBF1, and tomato SlMYB12. *CcMYB12* transcripts were detected specifically in artichoke immature inflorescence and young leaves. Electrophoretic mobility shift assays (EMSAs) revealed that recombinant CcMYB12 protein is able to bind to canonical AC element, a DNA binding site ubiquitously present in the promoters of genes encoding flavonol biosynthetic enzymes. Arabidopsis and tobacco plants overexpressing CcMYB12 protein were generated and characterized. Finally, by targeted metabolic and molecular analyses, we show that the ectopic expression of *CcMYB12* in Arabidopisis and tobacco plants promotes flavonol biosynthesis at expenses of anthocyanins.