

STRUCTURAL AND REGULATORY GENES INVOLVED IN ANTHOCYANIN BIOSYNTHESIS IN CITRUS ORGANS AND TISSUES

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The peculiar characteristic of blood oranges' and their hybrids' fruits is to present anthocyanin pigmentation in flesh and rind at maturity. In other species (lemons, *Papeda*, etc.) only flower buds and young shoot growth are anthocyanin purplish-red tinted.

Therefore assuming that in each tissue or organ anthocyanin biosynthesis may be regulated in a different way, the aim of this work was to test the differential expression level of some of the structural genes of the pathway, previously characterized [chalcone synthase (CHS), anthocyanidin synthase (ANS) and UDP-glucose-flavonoid 3-O-glucosyltransferase (UFGT)] and of a myc-like regulator (*csmyc2*), recently isolated and characterized.

The experimental work was conducted by mean of quantitative Real time RT PCR on young shoot growth of Zagara Bianca and Femminello lemons, Avana mandarin and Moro and Biondo oranges, on rind and flesh of Moro and Biondo oranges and of Avana mandarin and of *in-situ* hybridization on Moro and Biondo oranges.

An important distinction can be made on the basis of our results between the expression of target genes in the flesh of blood oranges and in the other tissues and organs. In particular in the flesh the different genes are strongly correlated among each other and with anthocyanin content, while only ANS transcript levels are related to pigment presence in the other tissues tested. Presumably the presence of CHS, UFGT and *csmyc2* even in non pigmented tissues suggests their involvement in an alternative pathway.