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Poster Abstract - B.19

EXPRESSION OF PAL GENES IN ARTICHOKE ORGANS

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Artichoke extracts are rich in phenolic compounds which possess several properties, from cell membrane protection to antibacterial, antioxidative, anti-HIV, bile expelling, hepatoprotective, urinative, and choleretic activities as well as cholesterol biosynthesis inhibition and LDL oxidation.

Phenylalanine ammonia-lyase (PAL) is an enzyme involved in the first enzymatic step of the phenilpropanoid biosynthesis pathway, i. e. the deamination of phenylalanine. In most plants, this enzyme is usually coded by more than one gene.

Starting from sequence information present in the databases, we had previously isolated different DNA fragments, by PCR approach, that showed high nucleotide similarity to PAL genes from other species. One of these fragments was used as a molecular probe for Southern analysis and to screen a genomic library in order to identify the complete artichoke PAL genes. At least three members of the PAL family were isolated and characterised. Genes differed for intron length and nucleotide sequence and for the coding region, resulting in different deduced aminoacid sequences.

The sequence of the three members of the PAL family was analysed in order to identify gene-specific regions where to design primers able to discriminate the expression of the individual members. One primer combination, that selectively amplified the artichoke *pal-1* gene was used to perform Real-Time PCR on cDNA synthesised from total RNA extracted from various organs. The expression of this gene resulted some 3-fold higher in leaves than in capitula.

These preliminary results seem to indicate that the distinct members of the PAL family may be differentially expressed in the different plant organs. Studies continue in order to identify new selective primer combinations to compare the expression level of the single members of the artichoke PAL family in different organs and with distinct induction signals.