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## MOLECULAR CHARACTERIZATION OF LHCbI ISOFORMS IN SPINACH AND THEIR RESPONSE TO HIGH LIGHT EXPOSURE

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The plant light-harvesting complex of photosystem II (LHC-II) collects and transmits solar energy for photosynthesis in chloroplast membranes and has essential roles in regulation of photosynthesis and in photoprotection. Native LHC-II isolated from plant tissue consist of three isoforms, LHCb1, LHCb2 and LHCb3, which form homo- and heterotrimers. Other LHC proteins are present in plants, which are also known as CAB proteins for their capacity to bind chlorophyll (Chl) *a* and Chl *b*. There are 10 known CAB proteins in higher plants: LHCb1-6 associated with photosystem-II, and LHCa1-4 associated with photosystem-II. In photosystem II, LHCb1-3 form a mobile and extern complex, LHCb4-6 are more closely associated with the core of the photosystem and are not mobile. Various studies carried out on different species, indicate the presence of different isoforms for the single polypeptides antenna of photosystem-II and photosystem-I. Currently, the role of different isoforms is poorly understood.

Although the isolation of spinach PS-II has been reported since 1981, and numerous biochemical and biophysical studies have been carried out on it, a complete description of genes coding for members of the spinach supercomplex, has not been reported yet. Currently only the genes coding for Lhcb1 and Lhcb6 polypeptides have been sequenced.

By taking advantage of the published sequences of *Lhcb1* gene in several plants, we have designed a couple of degenerated oligonucleotides which could amplify different *Lhcb1* isoforms occurring in the spinach genome. Sequencing of amplified regions allowed to identify three sequences encoding polypeptides which perfectly match the partial amino acid sequences of spinach Lhcb1 isoforms previously determined. RACE and Real-Time RT PCR analysis were carried out in order to get full sequences of cDNAs and to understand the possible involvement of these isoforms in plant adaptation to different light conditions. Obtained results will be presented and discussed here.