Transcriptional regulation, tissue-specific and developmental expression of 1-SST (sucrose: sucrose 1-fructosyl transferase) from *Taraxacum officinale*

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1-SST is the key enzyme initiating fructan synthesis in Asteraceae. Using RT-PCR with 1-SST specific primers, we isolated the 1-SST cDNA from dandelion (*Taraxacum officinale)*. At the amino acid level, the cDNA showed very high homology to other Asteracean 1-SST 's (*Cichorium intybus* 86%, *Cynara scolymus* 82%, *Helianthus tuberosus* 80%) but homology to 1-SST from *Allium cepa* (51%) and *Aspergillus foetidus* (31%) was much lower.

We analysed fructan concentrations, 1-SST enzymatic activities, 1-SST mRNA concentrations (Northern blots) and 1-SST protein concentrations (Western blots) in different tissues or organs from flowering *Taraxacum* plants (second year of growth): stalk, receptacle, intervenal leaf parenchyma, leaf veins, root phloem and root xylem which can be easily separated in dandelion plants. A good correlation could be found between Northern and Western blots pointing out that 1-SST is regulated at the transcriptional level. At the pre-flowering stage, 1-SST mRNA concentration was higher in the root phloem compared to the xylem resulting in higher 1-SST activities and higher fructan concentrations in the phloem. Fructan localization studies indicated that fructan is preferentially stored in clusters of phloem parenchyma cells in the immediate surroundings of the secondary phloem. However, inulin crystals also appeared to be present within xylem vessels.