CARACTERIZAÇÃO DA FUNÇÃO DO GENE *FLC-LIKE* DURANTE A TRANSIÇÃO DA ENDO- PARA ECODORMENCIA NA MACIEIRA

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Abstract:
The MADS-box *MdFLC-like* gene was previously described within the major QTL for time of bud break in apple chromosome Chr09, and its expression gradually increases towards dormancy release. The molecular mechanisms in which MdFLC-like modulates the transition from endo- to ecodormancy and from ecodormancy to bud break are unknown. Here, the *MdFLC-like* gene was characterised to better understand its role during dormancy progression. The increase in *MdFLC-like* expression coincides with a decrease in *MdDAM1* transcript levels during ecodormancy establishment. In agreement, a transactivation assay using Arabidopsis protoplasts revealed that MdFLC-like represses the *GUS* reporter gene controlled by the *MdDAM1* promoter. Moreover, apple calli overexpressing *MdFLC-like-3xFLAG* showed decreased *MdDAM1* expression and delayed growth, suggesting that MdFLC-like may also repress growth-related genes. A deeper characterization of the mRNA levels of *MdFLC-like* during bud break demonstrated that ambient temperature performs as an environmental trigger modulating its expression, which rapidly switched when temperatures changed between cold and warm. Notably, *MdFLC-like* and *MdFT2* expression dynamically oscillated in a contrasting pattern of expression under these conditions. Our results suggest that MdFLC-like is a repressor of *MdDAM1* and *MdFT2* during the transition from endo- to ecodormancy and from ecodormancy to bud break, respectively, in apple trees.
Key-words: *Malus* x *domestica*; dormancy; *FLOWERING LOCUS C*; *DAM1*; *FT2*

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