RoKSN, a floral repressor, forms protein complexes with RoFD and RoFT to regulate vegetative and reproductive development in rose

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Résumé en anglais	FT/TFL1 family members have been known to be involved in the development and flowering in plants. In rose, RoKSN, a TFL1 homologue, is a key regulator of flowering, whose absence causes continuous flowering. Our objectives are to functionally validate RoKSN and to explore its mode of action in rose.We complemented Arabidopsis tfl1 mutants and ectopically expressed RoKSN in a continuous-flowering (CF) rose. Using different protein interaction techniques, we studied RoKSN interactions with RoFD and RoFT and possible competition. In Arabidopsis, RoKSN complemented the tfl1 mutant by rescuing late flowering and indeterminate growth. In CF roses, the ectopic expression of RoKSN led to the absence of flowering. Different branching patterns were observed and some transgenic plants had an increased number of leaflets per leaf. In these transgenic roses, floral activator transcripts decreased. Furthermore, RoKSN was able to interact both with RoFD and the floral activator, RoFT. Protein interaction experiments revealed that RoKSN and RoFT could compete with RoFD for repression and activation of blooming, respectively. We conclude that RoKSN is a floral repressor and is also involved in the vegetative development of rose. RoKSN forms a complex with RoFD and could compete with RoFT for repression of flowering.

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