

RALF, a plant peptide hormone involved in tissue expansion, is processed by a convertase like in animals and yeast

Daniel S. Moura

Dep. Ciências Biológicas, UNIFESP, Campus Diadema.

Rapid Alkalinization Factor (RALF) is part of a growing family of small peptides with hormone characteristics in plants. Initially isolated from leaves of tobacco plants, RALF peptides can be found throughout the plant kingdom, and are expressed ubiquitously in plants. RALF peptides are believed to play a fundamental role in cellular biology, their genes are expressed in tissues during cellular expansion and the peptide inhibits root development and the growth of microcalli derived from cell suspension cultures. The peptides are derived from larger precursors and, just like prohormone proteins in animals and yeast, they may be processed at dibasic sites by convertases. Using the model plant *Arabidopsis*, we found that a dibasic site upstream of a plant peptide hormone, AtRALF1, is essential for processing. Overexpression of preproAtRALF1 causes semidwarfism whereas overexpression of preproAtRALF1(R69A), the propeptide with a mutation in the dibasic site, shows a normal phenotype. RALF1(R69A) plants accumulate only the mutated proprotein and not the processed peptide. In vitro processing using microsomal fractions suggests that processing is carried out by a kexin-like convertase.

Supported by FAPESP

Keywords: alkanization assay, prohormone, protein processing