

P009 Are F-box proteins with a C-terminal domain homologous to the tobacco lectin involved in protein degradation in plants?

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Many F-box proteins are involved in protein turnover. Target proteins are recruited into a Skp1-cullin-F-box complex where they are tagged with a polyubiquitin tail before targeting to the proteasome for degradation. In mammals, the occurrence of F-box proteins with a C-terminal sugar-binding domain that specifically interacts with high-mannose N-glycans on target glycoproteins has been documented. The identification and characterization of these sugar-binding F-box proteins (Fbs proteins) demonstrates that F-box proteins do not exclusively use protein-protein interactions to select their target proteins and provides direct evidence for the involvement of a carbohydrate-binding domain in the ubiquitin/proteasome pathway.

Recently, putative sugar-binding F-box proteins have been identified in plants. Genome analyses in *Arabidopsis* and rice revealed the presence of F-box proteins with a C-terminal lectin-related domain homologous to Nictaba, a jasmonate-inducible lectin from tobacco that was shown to interact with the core structure of high-mannose and complex N-glycans. Because of the high similarity in structure and specificity between Nictaba and the sugar-binding domain of the mammalian Fbs proteins a similar role for the plant F-box proteins with a Nictaba-domain in nucleocytoplasmic protein degradation in plant cells is suggested.