Promoter Analysis of Vegetative Storage Protein Genes from Alfalfa. (C02-cunningham122453-Poster)

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Abstract:

In alfalfa (Medicago sativa L.), vegetative storage proteins (VSPs) in taproots function as an N source used for initial shoot growth during spring and shoot regrowth after defoliation. Our objective was to isolate and characterize VSP promoters from alfalfa taproots. Three VSPs (32, 19 and 15 kDa) have been purified and cDNAs for the 32 and 19 kDa VSPs were isolated from alfalfa taproot cDNA libraries. Sequencing of the 32 and 19 kDa VSPs revealed that these genes possessed high sequence homology to Type III acidic endochitinases. A PCR adapter-based technique was used to 'walk' upstream from the coding sequence in order to isolate the VSP promoters. Gel-mobility shift assays, methylation sensitivity assays, and DNase I footprinting analysis will be conducted to identify potential cis-acting elements. Upon confirmation of the putative regulatory sequences, promoter deletion analyses will be performed using the green fluorescent protein (GFP) as a reporter of gene expression. This research will help us understand VSP gene expression and advance biotechnological applications of alfalfa improvement.

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