Analysis of the Acid Phosphatase Activity of Soybean Vegetative Storage Protein. (C07-leelaporn160407-Poster)

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Abstract:

Vegetative storage proteins (VSPs) are glycoproteins accumulated in vacuoles of paraveinal mesophyll. Acid phosphatases that are closely related to VSPs are also found in soybean nodules. VSP-like cDNAs were isolated from the perennials, G. tomentella and G.falcata, and their sequences were compared to VSP and ACP from G. max. The perennial cDNAs contained open reading frames of 253 amino acids that showed 84% and 75% protein sequence identity with VSPA, respectively. As the G. max VSPs, the predicted sequence of the perennial VSPs lacked an Asp that is found in ACP and in proposed to function in catalysis. The coding sequence for VSPalpha and ACP were each fused to the GST coding region in a pGEX expression vector. The activity of the resulting fusion purified from E. coli was assayed using pNPP as a substrate. VSPalpha showed <1U/mg specific activity compared to ACP. As found in previous results suggesting that specific activity of VSPs is low compared to other ACPs. Site-directed mutagenesis is being used to investigate whether incorporating an ACP into VSPalpha at the same relative position as found in the highly active ACP will increase the ACP activity of VSP.

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