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Defense protein synthesis in response to Cercospora beticola. Sugarbeets synthesize the PR (pathogenesis related) proteins in response to Cercospora fungal attack. We are studying the molecular basis of Cercospora resistance, particularly the role of PR proteins chitinase and glucanase. The objective of this study is to isolate the PR proteins for use in antibody production. These antibodies will be used to screen sugarbeets for Cercospora resistance. The PR protein chitinase was isolated from leaf spot resistant(LSR) leaf tissue by differential centrifugation, ammonium sulfate fractionation and chitin affinity. Optimumization for removal of contaminating proteins was determined to be 12% polyacrylamide, 2.67% bisacrylamide. The apparent molecular weight of the chitinase was 34 kD as determined by polyacrylamide gel electrophoresis. Isolation of β 1,3-glucanase from LSR leaves was accomplished using affinity chromatography. Glucose was bound to polyanhydroglucose and eluted off the column with 0.5% reduced laminarin. The proteins eluted off the column had an apparent molecular weight of 26 to 29 kD. The isoelectric point was determined to be 4.9. The activity of the purified glucanase was 19.9 μM min^{-1} with a specific activity of 142 μM min^{-1} mg^{-1} protein.