

- (5) Abu-Jawdah, Y., 1982. Changes in the soluble protein patterns of bean leaves upon fungal or viral infections or after chemical injury. *Phytopath. Z.* 102: 272-279.

### **Changes in protein patterns of bean leaves after bean rust infection or application of elicitor**

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Changes in patterns of soluble proteins of bean leaves after infection with bean rust (*Uromyces phaseoli*) were studied by electrophoresis in polyacrylamide pore gradient gels (4%-25% acrylamide).

Four newly formed *acidic* proteins not present in healthy leaves were found in extracts of inoculated leaves of the resistant, hypersensitively reacting variety (017). Their mol. wts were estimated as 17 000 (P<sub>1</sub>), 27 000 (P<sub>2</sub>), 33 500 (P<sub>3</sub>) and 34 000 (P<sub>4</sub>) (in the absence of SDS). The most prominent protein, P<sub>1</sub>, could be detected already 1 day and proteins P<sub>2</sub>-P<sub>4</sub> 2-3 days after inoculation; all increased in amount up to 8 days after inoculation. All new proteins were restricted to the hypersensitively reacting tissue. Changes were also detected for soluble *basic* proteins. Five bands which were faintly visible in healthy leaves of the resistant variety increased dramatically in intensity between the 4th and 8th day after inoculation with the fungus.

Four new proteins (identical or very similar in size to those found in the resistant bean variety) were induced in non-inoculated leaves of the susceptible variety Favorit by infiltration of a polyglucan which acts as an elicitor of phytoalexin synthesis (1). Inoculation with the fungus 2 h after infiltration with the elicitor resulted in a successful infection, whereas an infiltration 3 days *before* inoculation caused total protection, correlated with the presence of the four new proteins.

- (1) Hümme, B., Hoppe, H.H. & Heitefuss, R., 1981. Glucane aus Zellwänden der Uredosporenskeimschläuche von *Uromyces phaseoli* als Elicitoren der Phytoalexinanreicherung in *Phaseolus vulgaris*. *Phytopath. Z.* 101: 51-64.

### **Induction of pathogenesis-related (b) proteins in *Phaseolus vulgaris* upon fungal or viral infection or after chemical injury**

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Primary leaves of French bean (*Phaseolus vulgaris* L.) cvs Brittle wax or Immuna react with necrotic lesions to infection with either *Colletotrichum lindemuthianum* (Sacc. & Magn.) Bri. & Cav. or alfalfa mosaic virus (AMV).

Electrophoresis in 10% polyacrylamide gels of the soluble leaf proteins present in extracts of leaves infected with *C. lindemuthianum* or AMV revealed three bands (p1, p2 and p3) which were not seen in extracts of healthy leaves. Foliar sprays with the growth regulator Aliette (Phosethyl-Al) at 2000 ppm (a.i) delayed the appearance of