

P002 Proteome analysis of the barley aleurone layer: a model system for plant signaling

Christine Finnie, Birgit C. Bønsager, Birte Svensson

Department of Biochemistry and Nutrition, BioCentrum-DTU, Building 224, Technical University of Denmark, 2800 Kgs. Lyngby, Denmark.

The aleurone layer of cereal seeds plays a key role in germination, responding to a gibberellic acid signal by synthesizing hydrolytic enzymes that are released to the endosperm, before undergoing cell death. The barley aleurone layer can be separated from the other seed tissues and maintained in culture, allowing the study of gibberellic acid, abscisic acid and other signals in an isolated system. These properties have led to its use as a model system for the study of plant signaling and germination. In this proteome study aleurone layer proteins are analysed using 2-dimensional gel electrophoresis and mass spectrometry. Two cultivars are compared; Himalaya, an experimental cultivar used in many studies for aleurone layer cultures and protoplasts; and Barke, an agriculturally important barley cultivar. Germination-related changes in the proteomes are analysed in aleurone layers dissected from germinating grains and in isolated aleurone layers maintained in culture with or without the addition of gibberellic acid. In addition to the intracellular protein fractions, this system enables analysis of the release of hydrolytic enzymes, since these accumulate in the culture medium. This is an important function of the aleurone layer that is difficult to analyse in intact seeds.