Barley peroxidase isozymes. Expression and post-translational modification in mature seeds as identified by two-dimensional gel electrophoresis and mass spectrometry - DTU Orbit (15/03/2019)

Barley peroxidase isozymes. Expression and post-translational modification in mature seeds as identified by two-dimensional gel electrophoresis and mass spectrometry

Thirteen peroxidase spots on two-dimensional gels were identified by comprehensive proteome analysis of the barley seed. Mass spectrometry tracked multiple forms of three different peroxidase isozymes: barley seed peroxidase 1, barley seed-specific peroxidase BP1 and a not previously identified putative barley peroxidase. The presence of multiple spots for each of the isozymes reflected variations in post-translational glycosylation and protein truncation. Complete sequence coverage was achieved by using a series of proteases and chromatographic resins for sample preparation prior to mass spectrometric analysis. Distinct peroxidase spot patterns divided the 16 cultivars tested into two groups. The distribution of the three isozymes in different seed tissues (endosperm, embryo, and aleurone layer) suggested the peroxidases to play individual albeit partially overlapping roles during germination. In summary, a subset of three peroxidase isozymes was found to occur in the seed, whereas products of four other barley peroxidase genes were not detected. The present analysis documents the selective expression profiles and post-translational modifications of isozymes from a large plant gene family. (C) 2007 Elsevier B.V. All rights reserved.

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