Biochemical changes in the cell wall during drying of the resurrection fern *Mohria caffrorum*

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Mohria caffrorum has the ability to regulate its desiccation tolerance seasonally, being desiccation-tolerant (DT) in the dry and -sensitive (DS) in the wet seasons (Farrant *et al.,* 2009). Fronds of the DT form curl tightly around the stipe upon dehydration and open fully on rehydration, but sensitive fronds wilt and die upon drying. A biochemical investigation was undertaken to characterize changes that occur in the frond cell walls in response to desiccation and to compare these to those shown for two other resurrection plants that display regulated cell wall folding upon drying. Extracted cell walls of *M. caffrorum* DT and DS fronds were fractionated into the three major polymers of plant cell walls; pectin, hemicelluloses and cellulose and these further analyzed for changes in monosaccharide content. Overall wall composition was proposed based on these changes. Desiccation-induced changes occurred in the pectin and xyloglucan components, regardless of tolerance ability. Notable differences were seen between the sensitive and tolerant fronds in the molar percentages of arabinose and mannose; an increase in the former and a decrease in later were revealed for the DT fronds. The change in arabinose is proposed to be due to an increase in arabinan polymers or arabinogalactan proteins, which would serve to increase cell wall flexibility. A similar finding was reported for the angiosperm resurrection plant *Myrothanmus flabellifolius* (Moore *et al*., 2006). Degradation of the mannose-containing polysaccharides during drying is suggested to be a source of carbohydrate in the DT form.

Key words: cell wall**,** desiccation tolerance, fern, resurrection plant.