Title Enhanced expression of BiP is associated with treatments that extend storage longevity of primed tomato seeds.

Authors Gurusinghe, S., Powell, A. L. T. and Bradford, K. J.

Citation Journal of the American Society for Horticultural Science Vol: 127 (2002); 528-534

Abstract

While seed priming (hydration in water or osmotic solutions followed by drying) enhances seed germination performance, the longevity of primed seeds in storage often is reduced. Postpriming treatments including a reduction in seed water content followed by incubation at 37 or 40 deg C for 2 to 4 h can substantially restore potential longevity in tomato (*Lycopersicon esculentum* cv. Moneymaker) seeds. These conditions might induce heat-shock proteins (hsp) that could be involved in the extension of seed longevity. The abundance of BiP (78 kD Binding Protein), hsp70 and class I small hsp in primed seeds subjected to postpriming treatments was examined to assess this possibility. BiP mRNA and protein amounts increased during postpriming heat treatments that extended longevity of tomato seeds. Treatment of primed seeds with the calcium ionophore calcimycin (A21387) enhanced BiP protein accumulation in the absence of heat treatment and also extended potential seed longevity. Changes in the abundance of hsp70 and class I small hsps were not consistently associated with potential seed longevity. Thus, enhanced BiP expression may contribute to the improved longevity of primed seeds following postpriming treatments.