

Small heat shock protein message in etiolated Pea seedlings under altered gravity

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Plants are subjected to various environmental changes during their life cycle. To protect themselves against unfavorable influences, plant cells synthesize several classes of small heat shock proteins (sHsp) ranging in size from 15 to 30 kDa. These proteins are able to enhance the refolding of chemically denatured proteins in an ATP-independent manner, in other words they can function as molecular chaperones. The potential contribution of effects of space flight at the plant cellular and gene regulation level has not been characterized yet. The object of our study is sHsp gene expression in etiolated *Pisum sativum* seedlings exposed to altered gravity and environmental conditions. We designed primers to detect message for two inducible forms of the cytosolic small heat shock proteins, sHsp 17.7 and sHsp 18.1. Applying the RT-PCR, we explore sHsps mRNA in pea seedling cells, subjected to two types of altered gravity achieved by centrifugation (from 3 to 8g), by clinorotation (2 rpm), and temperature elevation (42°C). Temperature elevation, as the positive control, significantly increased PsHsp17.7, PsHsp18.1 expression. We investigate the expression of actin; it was constant and comparable for unstressed controls for all variants. Results are under discussion.