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EFFECTS OF ALTERED GROWTH ON THE LEVELS OF THE PLANT HORMONES AUXIN AND GIBBERELLIN IN *ARABIDOPSIS THALIANA*.

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Hormone homeostasis and interactions are critical for normal growth and development. In plants, the two hormones auxins and gibberellins (GAs) promote germination, increase growth, induce flowering and fruit development, and can be used commercially to affect the yield of crop plants, flowering time or fruit size. Recently, we demonstrated that seedlings of *Arabidopsis thaliana*, treated with paclobutrazol (an inhibitor of GA biosynthesis) or naphthylphthalamic acid (an auxin transport inhibitor, ATI), showed an up-regulation of the stem-expressed isoform of the GA biosynthetic enzyme GA 20-oxidase (GA20ox1). Since both of these treatments caused stunted growth, we proposed to examine the effect of altering growth on the levels of auxin and GA20ox1 to define if the up-regulation of genes in the GA biosynthetic pathway is a direct consequence of altered polar auxin transport OR if it is a global consequence of reduced growth. We first determined different media composition that gave us reduced growth. We then examined the expression of two GUS reporter gene constructs: one for the GA20ox1, and the other for a synthetic auxin response element which gives an indication of auxin levels and distribution. We showed that neither GA20ox1 or auxin levels were increased by treatments that retarded growth. Therefore, we conclude that the up-regulation of the GA20ox1 following treatment with ATIs is specific to an altered auxin transport and not due to stunted growth. The mechanism(s) by which auxin status affects transcriptional regulation of GA biosynthetic genes are still under investigation. This work is supported by the MBRS-RISE GM60655 and the NSF 0080934.