Title Using 5-aminolevulinic acid from *Rhodobacter spp.* to stimulate seed germination

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Abstract

5-aminolevulinic acid (ALA) is an amino acid which is a key precursor in biosynthesis of all porphyrin compounds. Application of cultured ALA at low concentration stimulates plant growth, increased plant's tolerance to environmental stress and enhances seed germination and respiration. The aim of this study was to use ALA to promote seed germination as well as to determine the optimum concentration of ALA for this purpose. Variety of seeds were soaked in ALA-hydrochloride (pure ALA) solution at 0.1 – 10 ppm and in a crude ALA solution from *Rhodobacter spp.* culture at 0.5 – 2 ppm for 12 h, at room temperature in darkness. The results show that the seeds that were soaked in pure ALA solution concentration had the highest germination percentage. For crude ALA solution, germination percentage was more than 80%. The results suggest that the crude ALA solution has the growth stimulating effects comparable to those of pure commercial ALA.