Screening of Plant Growth Regulators (PGRs) to Confer Plant Heat and Salt Stress.

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Plant growth regulators (PGRs) can confer plant heat and salt tolerance and induce systemic acquired resistance (SAR) in plants. Lab incubation studies on Hamlin (*Citrus Sinensis* (L.) Osbeck) orange leaves and greenhouse potted experiments with radish *(Raphanus sativus*) were conducted to investigate the effect of PGRs on heat response by citrus leaves as well as heat and salt response by radish plants. The PGRs tested consisted of sodium salicylate (NaSA), Potassium salicylate (KSA), Azelic acid sodium salt (NaAA), β-aminobutyric acid sodium salt (NaBABA), Keyplex 1200 DP, Foliar Blend (FB), K-Phite fungicide, KH_2PO_4, K_2HPO_4 and K_3PO_4 at varying levels. Hamlin leaves were kept in covered Petri dishes and exposed to 52 ^{0}C for 4 h in an incubator to induce heat stress. 0.25% FB, 0.25% K-Phite and 0.5% K-Phite significantly reduced Hamlin leaf cell electrolyte leakage by 65.6%, 50.1% and 20.8 % respectively compared to deionized (DI) water treated leaves (control). 0.05 mM NaBABA was also effective to induce SAR by reducing leaf leakage percentage significantly. The 30-day-old radish seedlings were heat treated at 47 ^{0}C for 5 h, 40 h after treatment. The results showed that soil drench with 0.15 mM KSA and 0.16 mM NaSA significantly increased leaf photosynthetic capacity by 44.6% and 45.6 % *relative to* DI water treated plant (control). The leaf electrolyte leakage was reduced as well, but not significantly. The effects of PGRs to increase plant tolerance to heat stress were highly dependent on their concentrations in applied solutions.