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### Abstract

$GA_3$  enhances the elongation growth of early dwarf rice (*Oryza sativa* cv. I-Geo-Gen) seedlings. Markedly preceding growth of the shoots is an increased RNA synthesis, as shown by total RNA determination and  $^{32}P$ -incorporation into RNA. But the increase in DNA content is later and is evident after treatment with  $GA_3$  for 4 days.

ABA inhibits shoot elongations, nucleic acid and protein synthesis. When  $GA_3$  is added together with ABA, it is found:

1) the inhibition of shoot growth by higher concentration of ABA (above  $5 \times 10^{-5}$  M) can't be overcome by the addition of  $GA_3$  even at reasonably high concentration.

2) the inhibition of growth by ABA below the concentration of  $5 \times 10^{-5}$  M can be gradually overcome by increasing the conc. of  $GA_3$ . When ABA ( $5 \times 10^{-6}$  M) is added together with  $5 \times 10^{-4}$  M  $GA_3$  for 5 days, shoot length of the dwarf rice seedlings reaches the level of dist. water control. RNA content is largely reversed, but the content of DNA, protein and shoot dry weight, though increased slightly, are still markedly inhibited over 50%.

These results suggest that the interaction between  $GA_3$  and ABA is partial, incomplete and non-competitive. i. e.,  $GA_3$  can only overcome part of the inhibitory action of ABA, while the other part, maybe the most part, on which they both act differently and independently can't be overcome by the addition of exogenous  $GA_3$ .

In addition, the interaction between these 2 hormones in the control of seed germination  $\alpha$ -amylase synthesis in embryoless half endosperms, and root growth of seedlings are studied and discussed.