

Reduction of Al-induced oxidative damage in wheat.

ABSTRACT

Aluminum stress inhibited root growth and caused serious oxidative damage in wheat (*Triticum aestivum* L.) seedlings. Under Al stress, added Ca significantly improved root growth, decreased Al, H₂O₂ and TBARS content and increased O₂-generation, Ca content, improved CAT activity, and decreased OXO and FA-POX activity. Interestingly, Ca levels did not have any significant effect on SOD activity under Al stressed condition. Histochemical data also showed that added Ca decreased the accumulation of phenolic compounds synchronously with the reduction of Al and H₂O₂ content in the Al-stressed roots. Both biochemical and histochemical data revealed that added Ca reduced oxidative coupling reactions (i.e. cross-link formation) of phenolic compounds by decreasing FA-POX and thus improving the root growth of wheat seedlings under Al stress. The results suggest that the exogenously supplied Ca may be involved in alleviating Al-induced oxidative damage by regulating ROS level via antioxidant enzyme activities and improving root growth by displacing Al from the root surface.

Keyword: Aluminium; Oxidative damage; Wheat.