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INTERACTIONS AMONG SALINITY (NaCl), POLYPHENOL OXIDASE, AND GROWTH REGULATORS IN THE GERMINATION OF WHEAT SEEDS

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ABSTRACT: *In this work that the effects of growth regulators and salinity on the activity of polyphenol oxidase during wheat seed* (Triticum aestivum *L. cv. Yayla 305) germination and early growth of the emerged seedlings were studied, salinity (NaCl), as expected, inhibited the germination. Growth regulators, kinetin, gibberellic acid (GA_3), and GA_3+ kinetin combination, removed this inhibition to a great extent. Both diphenolase (Dopa oxidase and catecholase) and monophenolase (tyrosinase) activities were detected in all the morphological parts of wheat seedlings. Dopa oxidase had the highest activity. The responses of polyphenol oxidase (PPO) enzymes to the salt showed a change according to the region in which they were located. While diphenolase activities of embryo were probably induced by the salt, its activity of monophenolase was inhibited. The situation in endosperm was contrary, diphenolases were inhibited when monophenolase was stimulated especially in the 1st day of germination. However, monophenolase activity of embryo was much higher than that of endosperm in the 2nd and 3rd days. Dopa oxidase activity of embryo in salt and water media was more than that of endosperm. Although catecholase activity of the control embryos in the saline medium was about 2 fold of that of endosperm, the activities in water were about at the same level in both parts. All the three applications of growth regulators, particularly GA_3 and GA_3+ kinetin combination increased catecholase activity of embryo in the salt medium. Similar result was observed in endosperm in the case of both water and salt. In endosperm, moreover, there were the stimulative effects of growth regulators on Dopa oxidase in the salt medium. Diphenolase activities of radicle and coleoptile in water were about at the same level. Catecholase activity of radicle in the saline medium was induced more than that of coleoptile by growth regulators.*