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Interaction of Malformin A1 and IAA in Root Gravitropic Response

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We purified malformin A1 from the crude malformin A mixture, and studied its action in the gravitropic response of maize roots (*Zea mays* L. cv Golden Cross Bantam). Intact primary roots that had been pretreated vertically with malformin A1 were placed in a humidified box in the horizontal position. Positive curvature (downward) was inhibited in 10^{-5} M and 10^{-6} M malformin A1 for 6 hr. However, lower concentrations of malformin A1 (10^{-7} M and 10^{-8} M) stimulated positive curvature compared with control. In addition, malformin A1 stimulated ethylene production in segments of maize roots. Especially, 10^{-5} M malformin A1 significantly increased ethylene production in root segments. In 2 hr period, IAA higher than 10^{-6} M inhibited gravitropic response, and 10^{-5} M malformin A1 had no effect on the IAA-induced gravicurvature. However, 10^{-7} M malformin A1 stimulated the IAA-induced gravitropic response. The malformin A1-stimulated gravitropic response became reduced in 4hr and 6 hr periods. However, IAA or malformin A1 caused stimulation of gravicurvature compared with control at 6 hr.

Keywords: Malformin A1, maize root, gravitropism, IAA