NEW BIOLOGICAL EFFECTS OF SUNDIVERSIFOLIDE ON PLANT GROWTH AND ITS RELATION TO AUXIN

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Many chemicals have been shown to act as allelopathic substances in living and fallen leaves. There is considerable information available regarding the allelopathy phenomenon itself and potential allelochemicals, but there have been few such reports on seeds of the sunflower plant and their exudate during seed germination. Sundiversifolide, 4,15-dinor-3-hydroxy-1(5)-xanthene-12,8-olide, was isolated and identified from the exudate of seeds of the Taiyo sunflower as a new plant species-specific allelopathic substance (Ohno et al., 2001). However, detailed information on the effect of sundiversifolide on the growth of platns has not yet been reported. Auxin, indole-3-acetic acid, is one of the main regulators of plant growth. The activity of sundiversifolide may be related to main plant growth regulators such as auxin. Although very little sundiversifolide can be isolated, the relationship between the amount of a substance and its inhibitory activity as an allelochemical has not yet been well studied. Sundiversifolide inhibited auxin–induced growth of oat coleoptile sections at concentrations greater than 10 ppm ($P<0.05$). However, it did not affect the auxin-induced growth of sunflower hypocotyl sections at the concentrations tested. These results suggest that sundiversifolide may have inhibitory activity in plants mediated by some mechanism related to auxin in sunflower plants. The relationships between other substances isolated from sunflower and auxin also investigated.