Study of auxin-like and cytokinin-like activities of derivatives of pyrimidine, pyrazole, isoflavones, pyridine, oxazolopyrimidine and oxazole on haricot bean and pumpkin plants

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Abstract: The auxin-like and cytokinin-like activities of new chemical low molecular weight heterocyclic compounds, derivatives of pyrimidine, pyrazole, isoflavones, pyridine, oxazolopyrimidine and oxazole were studied. The specific bioassay on auxin-like activity showed high stimulating effect of the chemical heterocyclic compounds, derivatives of pyrimidine, pyrazole, isoflavones, and pyridine used at the concentration 10⁻⁶M on the formation of adventitious roots on the 14th-day-old leaf petioles isolated from seedlings of haricot bean (Phaseolus vulgaris L.) cv. Belozernaya, which was similar or higher of the effect of plant hormones auxins IAA and NAA used at the same concentration 10⁻⁶M. The specific bioassay on cytokinin-like activity showed the high stimulating effect of the chemical heterocyclic compounds, derivatives of pyrimidine, pyrazole, isoflavones, pyridine, oxazolopyrimidine and oxazole used at the concentrations 10⁻⁸M and 10⁻¹⁰M on the growth of biomass of 16th-day-old cotyledons isolated from seeds of muscat pumpkin (Cucurbita moschata Duch. et Poir.) cv. Gilea, which was similar or higher of the effect of plant hormone cytokinin Kinetin used at the same concentrations 10⁻⁸M and 10⁻¹⁰M. The obtained results proved the inducing auxin-like and cytokinin-like effect of synthetic heterocyclic compounds on plant cell elongation, division, and differentiation that are the basic processes of plant growth.

Keywords: plant hormones, IAA, NAA, Kinetin, pyrimidine, pyrazole, isoflavones, pyridine, oxazolopyrimidine, oxazole, Phaseolus vulgaris L., Cucurbita moschata Duch. et Poir.


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