

THE EFFECT OF CYTOKININS ON GROWTH and PIGMENT ACCUMULATION OF RADISH SEEDLINGS (*RAPHANUS SATIVUS* L.) GROWN IN THE DARK and AT DIFFERENT LIGHT QUANTA FLUENCE RATES*

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Abstract

Abstract— The dependency of cytokinin effects upon irradiance was studied with radish seedlings (*Raphanus sativus* L. cv. Saxa Treib). Kinetin (6-furfurylamino-purine) or BAP (6-benzylamino-purine) were applied via the roots of plants growing either in continuous darkness or under high (90 Wm⁻²) or low intensity white light (10Wm⁻²). Apart from the different development of plants at low and high fluence rates, the following cytokinin effects were found:

(1) Both cytokinins acted in a similar manner on growth characteristics and pigment accumulation at high and low light conditions, BAP being in many cases more effective than kinetin.

(2) When compared with the control, the cytokinins suppressed hypocotyl and root lengthening in the dark and light-grown plants. In darkness they led to increased cotyledon areas, whereas in the light the leaf expansion was suppressed.

(3) In the etiolated and low light grown plants, the anthocyanin content of the hypocotyls was enhanced due to the action of cytokinins, whereas under high light the anthocyanin accumulation was decreased.

(4) In the cotyledons of etiolated plants, more phototransformable protochlorophyll(ide) and more carotenoids were formed when cytokinins were present. In green leaves the carotenoid

content was diminished due to the action of cytokinins, particularly in plants grown in strong light. The chlorophyll *a/b* ratio was increased in the cytokinin-treated plants in most cases. The results suggest a light dependency of the cytokinin effects. It is believed that the response of a plant towards exogenously applied cytokinins is similar to that with high intensity light.