



EFFECTS OF Cu^{2+} , CYTOKININS AND JASMONATE ON CONTENT OF TWO FLAVONOLS IDENTIFIED IN ZUCCHINI COTYLEDONS

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This study examined the effects of cytokinins and methyl jasmonate (JAMe) alone and in combination on the growth and flavonol content of zucchini cotyledons cultured in the presence or absence of Cu^{2+} . During greening of cotyledons in intensive diurnal illumination, rutin was identified as the main flavonol compound. Its accumulation was greatly stimulated by phenylurea cytokinin (4PU-30) but reduced by Cu^{2+} . Stimulation by benzylaminopurine (BA) was less. JAMe showed an inhibitory effect, alone and with simultaneous addition of Cu^{2+} or cytokinins. In moderate excess (100 μM and 250 μM CuSO_4), Cu^{2+} enhanced stimulation by 4PU-30 of rutin accumulation; at a higher concentration or with other substances it decreased the rutin level. The other flavonol detected, kaempferol-3-rhamnoside, increased after JAMe or 4PU-30 were added; in the other cases it decreased. The data obtained indicate that cytokinins can increase rutin content in developing *Cucurbita* cotyledons. Rutin content usually decreased under stress induced by excess Cu^{2+} , but Cu^{2+} in moderate excess had a stimulating effect in the presence of higher phenylurea cytokinin levels.

Key words: Copper, *Cucurbita pepo* cotyledons, cytokinins, flavonoids, growth, heavy metals, methyl jasmonate, rutin.

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