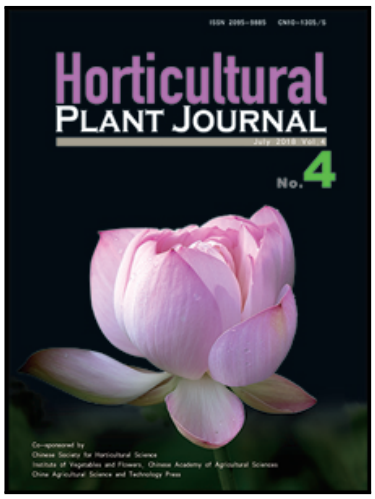

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Physiological Effect of Kinetin on the Photosynthetic Apparatus and Antioxidant Enzymes Activities During Production of Anthurium

Fabiana B. de Moura[a], Marcos R. da S. Vieira[a, *], Adriano do N. Simões[b], Sérgio L. Ferreira-Silva[b], Carlos A. V. de Souza[b], Eduardo S. de Souza[b], Alexandre T. da Rocha[c], Luzia F. da Silva[b], and Miguel A. Júnior[a]

[a] *Faculty of Agronomy, Federal University of Pará, Altamira-PA, 68372-040, Brazil*

[b] *Postgraduate Program in Plant Production, Serra Talhada Academic Unit, Federal Rural University of Pernambuco, Serra Talhada-PE, 56909-535, Brazil*

[c] *Department of Production Vegetable, Unidade Acadêmica de Garanhus, Federal Rural University of Pernambuco, Garanhus-PE, 55292-270, Brazil*

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Abstract

The results observed in the literature raise the hypothesis according to which cytokinin plays important roles in photosynthetic metabolisms and antioxidant enzymes. Thus, the study aimed to evaluate the effect of foliar application of the isolated cytokinin kinetin at the production cycle, seeking to analyze its effects on enzyme activity and photosynthetic parameters. The plants treated with CK presented reduction of leaf CO_2 assimilation rate (P_n) and stomatal conductance (G_s), while that transpiration rate (T_r) was unaffected. The internal CO_2 concentrations decreased with the increase in cytokinin levels, but were maintained under CK 50 mg·L^{-1}. The plants treated with CK 75 mg·L^{-1} was verified higher carboxylation efficiency (P_n/C_i), which was associated to values of CO_2 assimilation and transpiration unaltered. Apparent electron transport rate showed variations in the concentration of 25 mg·L^{-1}. Considering the study of enzyme activity, on the other hand, it cannot be stated that kinetin has an effective action in delaying oxidative damage. It presents mixed results, since an efficiency in the application of cytokinin was not observed, presenting induction levels of ascorbate peroxidase activity. Thus, further research is needed to determine more precisely the effects of kinetin on gas exchange and antioxidant enzymes in anthurium plants.

Keywords: anthurium; kinetin; photosynthesis; senescence; plant hormone; oxidative stress

1. Introduction

Anthurium (*Anthurium andraeanum* Lindl.) is a relevant cultivated ornamental species. It is appreciated for its flowers and marketed as cut flowers and pot plants. In Brazil, anthurium expanded in São Paulo, especially in the Vale do Ribeira, a region with ecological conditions favorable to its development. In other parts of the country, it is developed traditionally (Tombolato et al., 2004). Currently, the modern flower farming uses growth regulators to develop flowers in the offseason, to decrease or increase the size of stems, to increase the number of flowers per plant, to change the color tone and to slow down the process of senescence (Yamada, 1992; Taiz and Zeiger, 2009). Growth regulators are synthetic compounds similar to plant hormones that, in small amounts, regulate biochemical, physiological, and morphological processes (Castro et al., 2005).

The hormonal balance is essential for the development of plants. The most important hormonal groups for this process are

* Corresponding author. Tel.: +55 87 998107880

E-mail address: mrv@ufpa.br