EFFECTS OF HEAVY METAL ZINC ON PETAL SENESCENCE OF *ROSA FLORIBUNDA* LINN.

Seema Khurana, A.K. Bhargava, Sonali Bhargava, S.K. Agarwal and Amit Dhiman

Botany Department,
M.S. College, Saharanpur - 247001

Abstract: The effect of Zinc concentration on senescene of Cut Rosa sp. Flowers, in light and in the dark in terms of total anthocyanin levels were investigated. It was found that the heavy metals show concentration dependent effects. The lower concentrations delay and higher concentration accelerate the petal senescene both in light and in the dark. Further it is noted that the concentrations of Zinc delay petal senescence in light as compared to the dark.

Keywords: Zinc, Heavy metal, Senescence.

INTRODUCTION

Rosa Heavy metal pollution has created much ecological problems as pollutants coming in air, water and soil through various sources such as mining, manufacturing, industrial and apricultural chemicals, creating great problems for life. Twin action of promotion and inhibition of growth and yield, at the lower and the higher concentrations of Ni and Zn in legumes and cucurbits is well known Bhargava & Singh (1982), Richa & Bhargava (2006), Reshu and Bhargava (2007), and Ritu *et al*. (2009). Sharma (1982) demonstrated the promotion and inhibition of chlorophyll synthesis, and certain enzymes at the lower and higher concentrations of Hg. Roa (1982) has show delaying of petal senescence by several growth bormones. Bhargava & Singh (1984) reported effect of nickel and Zinc on petel senescence of *Delonix regia* Linn.

MATERIALS AND METHODS

On the basis of previous work on leaf senescence (Banerji 1966), La Loriya *et al*. (1997) and petal senescence Rao (1982), Rosa Floribunda cut flowers were kept with pedicel dipping in distilled water and in solutions of Zncl2 (containing 0.1 and 50 mg/l Zn), in complete darkness and in diffuse light (Ca 25°Lux), at room temperature (25±3°C). Total anthocyanins and dry weight levels were analyse, in peripheral petals of cut flowers, at the beginning (0 days initial) and on different days of incubation. Total anthocyanin was estimated in 95% ethanol: 1.5 N HCl (85:15 V/V) Kept overnight at ca 4°C, supernatant collected by centrifugation, made up of 25 ml of aliquot made of 10 ml and A535 was read in a colorimeter. Total anythocyanin contents were calculated according to formula of Feluki and Francis (1968). the results are average of triplicate sets and are given in table. Observations were statistically analysed e.i. erithmetic mean (as the measure of central tendency) and standard error (as to test the statistical hypothesis) average of triplicate sets and standard deviation (as the measure of dispersion) on 6 petal are given.

RESULTS

Table shows that the lower concentratiosn of Zn delay and higher concentrations of Zinc accelerate the petal senescence of cut Rose flowers, in terms of total anthocynin levels decline by Ca 81% from the initial levels, in control petals, 2 days after incubation. At the lower concentrations Zn decline is delayed, the respective values being ca 79% from the initials, 4 days after the decline.

The conentratiosn of Zn alongwith controls, the petal senescence is delayed in light as compared to the dark. Tus in the light, total anthocyanin levels decline by ca 85% from the initial, in control petal, 3 days after incubation. This decline is delayed by lower concentration of Zn respective vales being ca 65% from the initials, 4 days after incubation. Higher concentrations of Zn accelerate the decline of anthocyanin and dry weight by ca 83% from the intials just 2 days after incubation. The delaying of petal senescence at the lower concentrations of Zn is in agreement with the reports of Madvedeva (1968) and Kikkawa *et al*. (1955). They showed that the lower concentrations of metals delay the petal senescence of Dahlia and Chrysanthemum. The acceleration of petal senescence at the higher concentrations of heavy metal may be due to its phytotoxic effects in plant growth and metabolism Singh and Bhargava (1984). The greater retention of total anthocyanin in light as compared to the dark for control and in Zinc concentrations may be due to the known effect of light on anthocyanin biosyntheses (Mancinelli *et al*., 1976).

Table. Effects of different concentrations of Zn of Total Anthocyanin and dry Weight levels in peripheral petals of *Rosa floribunda* Linn.

Sr. No.	Treatment	Days after incubation									
		Dark					Light				
		0	1	2	3	4	0	1	2	3	4
		Total anthocyanin, mg/g fresh weight ± S.E.									
1.	control	25.17 ±3.12	8.35 ±2.50	5.16 ±1.92	*	*	25.17 ±3.12	10.21 ±2.46	7.16 ±1.75	4.00 ±0.92	*
2.	*Zinc, 0.1mg/l*	25.17 ±3.12	16.48 ±2.10	12.00 ±1.50	7.42 ±1.06	5.00 ±1.00	25.17 ±3.12	19.00 ±1.87	13.60 ±1.52	9.62 ±1.08	7.69 ±0.62
3.	*Zinc, 50mg/l*	25.17 ±3.12	6.95 ±1.10	*	*	*	25.17 ±3.12	8.05 ±1.50	5.10 ±1.00	*	*

*Senescence Completed, ± S.E.=Standard Error

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