



In vivo study: Analysis of resistance, the chlorophyll content and the density of stomata of *Vanilla planifolia* mutant resistant to *Fusarium* wilt disease *)**)

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1. INTRODUCTION

Research on *Vanilla planifolia* plantlet with fusaric acid (FA) has been done before, and found indication of tolerant FA concentration for its *in vitro* resistant plantlet selection. Inoculation of the *Fusarium oxysporum* f. sp. *vanillae* isolates (*Fov*) in resistant plantlets performed *in vivo*, followed by analysis of DNA and protein profile of mutant. The results of the previous study, in the form of specific DNA bands having a size of 530 bp (OPB_14), 430 bp (OPB_20), and 230 bp; 270 bp (OPD_19), and predicted as RAPD marker candidates for plantlet endurance against *Fov*; The new protein band (MW ± 18 kD) in SDS-PAGE ID indicates the formation of plantlet against *Fov*. The stages of this research include: analysis of resistance, the chlorophyll content and the density of stomata of resistant to *Fusarium* wilt disease. The results showed that *in vivo* condition using concentration of FA of 110 ppm was effective for suppressing the growing of *Fov*, by intensity up to 25%, compared to the concentration of 90 ppm and 100 ppm respectively. In other words by using 110 ppm fusaric acid could increase the category criteria to resistant. There was a significant increased in the total of chlorophyll, the chlorophyll a and chlorophyll b, and density of stomata, overall in line with the rising FA concentration.

2. OBJECTIVES

Objectives of research were to study and determine of: 1) analysis of resistance, 2) the chlorophyll content and 3) the density of stomata of mutant resistant to *Fusarium* wilt disease.

3. METODE

Resistant plantlet has already verify when spores of microorganism *Fov* had infected to plant didn't affected on this *in vivo* plant respectively

Chlorophyll analysis using Harborne method (1987):
Total chlorophyll = 17,31646 + 7,131663 mg / L;
Chlorophyll a = 12,211463 - 2,811464 mg / L; Chlorophyll b = 20,131646 - 5,831463 mg / L.

Density of Stomata:
the ratio of the number of stomata per unit of leaf area
The final result is an average of 10 observations.

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4. RESULTS AND DISCUSSION

A. Pathogenic Intensity result from defend and level vanilla at different fusaric acid concentration treatment.

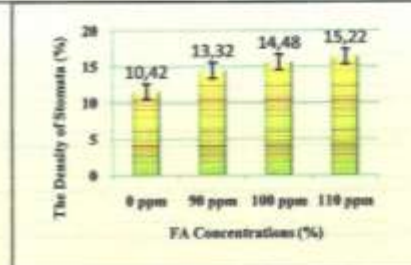
Treatment	Day observation							
	IP (%)	Resistant Category	IP (%)	Resistant Category	IP (%)	Resistant Category	IP (%)	Resistant Category
0 ppm	72,60	Sensitive	92,60	Sensitive	95,77	Sensitive	100,00	Sensitive
90 ppm	41,20	Moderate	43,45	Moderate	43,77	Moderate	39,00	Moderate
100 ppm	43,20	Moderate	43,77	Moderate	39,00	Moderate	39,00	Moderate

note: IP= Pathogenic intensity

B. The Chlorophyll Content

Treatment (ppm)	Average total chlorophyll content (mg/L)	Average a-chlorophyll content (mg/L)	Average b-chlorophyll content (mg/L)
0	6,802 ± 0,811 ^a	3,377 ± 0,063 ^a	2,310 ± 0,817 ^a
90	7,443 ± 0,810 ^b	4,603 ± 0,814 ^b	1,743 ± 0,812 ^a
100	8,681 ± 0,815 ^c	5,116 ± 0,813 ^c	2,370 ± 0,802 ^a
110	9,124 ± 0,818 ^d	5,685 ± 0,825 ^c	2,415 ± 0,812 ^a

C. The Density of Stomata



5. CONCLUSIONS

- By using 110 ppm FA could increase the category criteria to resistant
- There was a significant increased in the total of chlorophyll, the chlorophyll a and chlorophyll b overall in line with the rising FA concentration.
- There was a significant increased in the density of stomata overall in line with the rising FA concentration.

6. REFERENCES

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