

Effect of Leaf Extract of *Chenopodium album* on the Development of Fruit Rot in Tomato Caused by *Aspergillus niger* in Presence of *Drosophila busckii*

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Leaf extract of *Chenopodium album* suppressed the fruit rot caused by *Aspergillus niger*. It also adversely affected *Drosophila busckii*, which aggravated fruit rot.

Key Words Extract Fruit-rot Reduction .

Fruit rot of tomato caused by *Aspergillus niger* is aggravated by the insect *Drosophila busckii*. Control of the fungus and insect has been a problem. In earlier studies (Sinha & Saxena, 1986) extracts of a few plants have given good protection to fruits. We have tested the efficacy of extract of *Chenopodium album* to control the fruit rot caused by *A. niger* in presence of *D. busckii*.

Leaf extract of *C. album* was prepared by grinding 10 g of freshly collected washed leaves in 100 ml of distilled water. The extract was filtered through Whatman filter paper no.1 and dilutions were made in sterile distilled water. Healthy tomato fruits were inoculated with spores of *A. niger* by pin-prick method both prior and after the treatment with leaf extract and kept in sterile desiccators. Adults of *D. busckii* were released at different intervals i.e., 10, 20 and 30 minutes. In other sets the treated fruits were fed to *D. busckii* and inoculated with the fungus only. Suitable controls were kept. Intensities of fruit rot were recorded after 2, 5, 7, 10 and 15 days.

No rotting of fruits developed up to 15 days in those treated with the leaf extract of *C. album* when fruits were fed to insect at all feeding durations (Table 1). No rotting of fruits by *A. niger* occurred when treated with leaf extract both prior and after inoculation up to 5 days.

Severe infection occurred only after 15 days. Insect feeding, no doubt aggravated the rotting of fruits but it was less in fruits treated with leaf extract after the inoculation with the fungus. When fruits were fed to insects and inoculated with spores of *A. niger* before and after treatment with the extract, the protection continued for 5 days. In short duration feeding (10 min) the protection lasted longer. The efficacy of leaf extract, however, decreased with increased dilution.

It is likely that chemicals such as phenols and alkaloids present in the plant act as repellent a toxicant to insect and inhibitors to the fungus as reported (Yoshii & Salxo, 1967) against virus and (Ahmad *et al.*, 1973) against *Puccinia coronata*. We propose that the leaf extract of *C. album* may be used for protecting fruits against fruit rot pathogen.

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Table 1 Effect of treatment of Fruits with Leaf extract of *C. album* on the Development of Fruit Rot of Tomato Caused by *A. niger* in presence of *D. busckii*.

Treatment	Conc. of extract (%)	2	Symptoms after (Days)			
			5	7	10	15
Treated with leaf extract						
Uninoculated and unfed	S	-	-	+	++	+++
	1.0	-	-	+	++	++
	0.1	-	-	+	++	+++
Inoculated with fungus after treatment	S	-	-	++	++	+++
	1.0	-	+	++	++	+++
	0.1	-	+	++	++	+++
Inoculated with fungus before treatment	S	-	-	++	++	+++
	1.0	-	+	++	+++	+++
	0.1	-	+	++	+++	+++
Inoculated with fungus and insect fed (min) after treatment						
10	S	-	-	-	-	-
	1.0	-	-	++	+++	+++
	0.1	-	-	++	+++	+++
20	S	-	-	++	++	++
	1.0	-	-	++	+++	+++
	0.1	-	-	++	+++	+++
30	S	-	-	++	+++	+++
	1.0	-	-	++	+++	+++
	0.1	-	-	++	+++	+++
Inoculated with fungus and insect fed (min) after treatment						
10	S	-	-	-	-	++
	1.0	-	-	++	+++	+++
	0.1	-	-	++	++	+++
20	S	-	-	++	++	+++
	1.0	-	-	++	+++	+++
	0.1	-	-	+++	+++	+++
30	S	-	-	-	-	++
	1.0	-	-	++	++	+++
	0.1	-	-	+	+++	+++
Insect fed alone (min)						
10	S	-	-	-	-	-
	1.0	-	-	-	-	-
	0.1	-	-	+	+	++
20	S	-	-	-	-	-
	1.0	-	-	-	-	-
	0.1	-	-	+	+	++
30	S	-	-	-	-	-
	1.0	-	-	+	+	++
	0.1	-	-	+	+	++

(-) Nil, (+) Poor, (++) Moderate and (+++) Severe. S= standard.