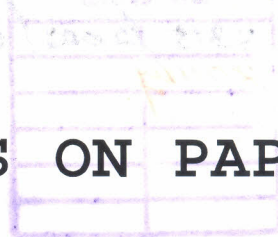


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SOME STUDIES ON PAPAYA  
RINGSPOOT VIRUS (PRSV)  
INFECTION IN  
*Carica papaya* L.

BY

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**SOME STUDIES ON PAPAYA RINGSPOT VIRUS (PRSV)  
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**ABSTRACT**

Fifteen papaya virus isolates from different infected areas of the country were collected and characterized using biological, physical and chemical properties. The investigation showed that the virus infecting papaya is transmitted mechanically but not through seeds or pollen. Symptomatology, physical and chemical properties revealed that the isolates were related to PRSV-P type. However, the host range of these isolates suggested that they may be of different pathotype. The protein and non-protein nitrogen contents in the leaves of the host, *Carica papaya* were affected by the PRSV, but the total nitrogen content remained significantly unchanged when compared to those of healthy leaves. About one and a half times increase in non-protein and a corresponding decrease in protein nitrogen contents were detected in the inoculated leaves after three hours of inoculation. The changes

in the leaves of non-protein and protein were first detected in the mechanically inoculated leaves in three hours of inoculation. Similar effects of PRSV infection were observed in naturally infected field plants.

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Studies on fractional composition of non-proteinous nitrogen revealed that the virus had an effect on the contents of free amino acids in the infected papaya leaves. Seven amino acids: aspartic acid, glutamic acid, serine, arginine, threonine, alanine and glycine were detected by paper and thin layer chromatography techniques, in the leaves of both healthy and PRSV infected leaves. A visual increase of all amino acids except glutamic acid were observed in infected leaves when compared to healthy leaves. These changes were first detected within three hours of inoculation and the same tendency was observed at the later stages of disease development. The High Performance Liquid Chromatography (HPLC) detected 15 amino acids, including the above seven amino acids. A two fold increase in the concentration of serine, alanine, arginine, threonine and aspartic acid was observed in the leaves infected with PRSV. Methionine, valine, histidine and tyrosine contents in the infected leaves were decreased but no significant differences were found in the contents of glutamic acid, isoleucine and leucine.

A mild strain of PRSV was not found among the field collection. However, a mild mutant strain, PRSV-MIII, was produced by nitrous acid treatment. Papaya seedlings inoculated with this mild mutant remained symptomless. Under greenhouse conditions, protection was observed when PRSV-MIII was used to protect papaya against different challenge inoculations with a severe strain. This symptomless mutant could be used as a protection for control of PRSV.

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