Post-Infection Changes in Sugar and Organic Acid Contents of Chilli (*Capsicum annuum* L.) and Mango (*Mangifera indica* L.) Leaves

The infection of chilli (*Capsicum annuum* L.) and mango (*Mangifera indica* L.) leaves by *Curvularia ovoidea* (HIROE and WATANABE[1]) Muntanola and *Curvularia lunata* (Wakker) BOEDIJN[2] var. aeria (BATISTA, LIMA and VASCONCELOS[3]) M.B. Ellis, respectively caused considerable changes in sugar and organic acid contents. Studies by SRIVASTAVA and TANDON[4] have revealed that fungal invasions cause marked changes in the chemical composition of different parts of plants. But so far there has been no proper study of the changes induced by the above organisms. A detailed study was therefore undertaken.

Materials and methods. Leaves of the same age were inoculated with the respective pathogens. 1 g each of healthy and diseased oven-dried and finely-powdered leaves was taken. Extracts were prepared with 25 ml of 80% ethanol. They were filtered and evaporated to dryness. The residues left were dissolved in 1 ml of 20% ethanol and were centrifuged at 2000 rpm for 30 min. The clear supernatant liquids were decanted and used for chromatographic analysis.

The circular paper chromatographic technique employed by RANJAN et al.[5] was followed for detection of sugars. The chromatograms were sectored pieces of Whatman filter paper No. 1 (27 cm in diameter). They were run in *n*-butanol–acetic acid–water (4:1:5, v/v) and were subsequently sprayed with aniline-diphenyl amine-*ortho*phosphoric acid (5 vol. of 4% aniline, 5 vol. of 4% diphenyl amine and 1 vol. of *ortho*phosphoric acid), as recommended by BUCHAN and SAVAGE[6]. They were then heated in an electric oven at 110 °C for 90 sec.

LUGG and OVERALL'S[7] technique of one-dimensional paper chromatography was employed for detection of organic acids. The running solvent was *n*-butanol–formic acid–water (10:2:5, v/v) and spray reagent was 0.04% bromophenol blue in 90% alcohol (w/v). The Rf values of these sugars and organic acids were compared with those of known ones.

Results and discussion. The results are recorded in the Table. It is evident from the Table that 3 sugars, viz. sucrose, glucose and fructose, and 2 organic acids, namely malic acid and citric acid, were present in the healthy chilli and mango leaves. Besides these, healthy leaves of mango contained oxalic acid also. It was observed that the 3 sugars present in the healthy leaves were not present in the diseased leaves of the 2 hosts. The amount of organic acids was also markedly reduced under such conditions. The total absence of the sugars and a considerable decrease in the organic acids in infected tissues may be attributed to their utilization by the pathogens.

Zusammenfassung. Die Infektion der Blätter von *Capsicum annuum* und *Mangifera indica* mit den Blattpilzen *Curvularia ovoidea* beziehungsweise *lunata* hat zur Folge, dass die freien Zucker Saccharose, Glukose und Fruktose verschwinden und dass der Gehalt an organischen Säuren (Apfelsäure, Zitronensäure, Oxalsäure) vermindert wird.

Sugar and organic acid contents of healthy and diseased leaves of chilli and mango

Sugar and organic acid	Chilli leaves		Mango leaves	
	Healthy	Diseased	Healthy	Diseased
Sucrose	2^+	—	+	—
Glucose	+	—	+	—
Fructose	+	—	+	—
Malic acid	2^+	+	2^+	+
Citric acid	2^+	+	2^+	+
Oxalic acid	—	—	2^+	+

The signs +, 2^+ indicate comparative concentrations; — indicates absence.

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Interaction between Morphactin, AMO-1618 and Different Gibberellins in Potato Sprout Growth

Although it has been shown that gibberellic acid (GA_3) can negate the inhibition of internodal elongation caused by morphactins[1–4] and in pea stem elongation test morphactins have been claimed to act as competitive gibberellin-antagonist[4] but the interaction between morphactins and other gibberellins remains to be seen. Therefore, it was considered of interest to study the interaction between morphactin (methyl-2-chlora-9-hydroxyfluorene-(9)-carboxylate) and different gibberellins and to compare these interactions with those between AMO-1618 (2-isopropyl-4-dimethylamino-5-methylphenyl-1-piperidine-carboxylate methyl chloride) and these gibberellins. The results obtained show that while AMO-induced inhibition is reversed by all the gibberellins used that induced by morphactin is negated only by GA_3.

Twenty 'eyes' (1 × 0.5 cm) excised from freshly harvested 'OT-NO' potato tubers were floated for 24 h in each test solution separately in petri-dishes and thereafter these were planted in sand and kept under continuous light (2000 lux intensity). Observations were recorded on the date of commencement of sprouting. The length of sprouts was measured 14 days after treatment. The re-