

Intracellular Inclusions Associated with Maize Mosaic Virus Infection

Mosaic disease of maize was first recorded in India by CHONA and SETH¹. They studied the properties and vectors and determined some alternative hosts of the causal virus. The maize mosaic virus (MMV) was considered distinct from any other recorded so far on maize, as also from sugar-cane mosaic virus as it did not infect sugar-cane. In further studies with this virus, PALIWAL and RAYCHAUDHURI² determined the shape and size of MMV particles. In this communication, the intracellular inclusions ob-

served in epidermal cells of mosaic-affected maize plants are described.

Preparations were made of the epidermal strips, which were peeled from leaves of the diseased (15 to 20-day-old infection) and healthy maize plants of the same age and cut into suitably small pieces. These pieces were fixed and stained with the Giemsa stain method of BALD³, as modified by RAWLINS⁴, with the further slight modification that the epidermal strips were stained for 45 min in Giemsa solution instead of 15 min as employed by RAWLINS⁴. Strips from diseased and healthy leaves were run through the staining schedule simultaneously, giving exactly similar treatments to both lots. The nuclei and 'inclusion bodies' were stained pinkish purple, while the cell walls, etc., were stained green.

The 'intracellular inclusions' or 'inclusion bodies' were found quite frequently in the epidermal cells of the leaves of mosaic-affected maize plants. These inclusion bodies were either elongated (Figure 1) or spherical to oval (Figure 2) in shape and were found mostly associated with or attached to the cell nucleus. In some cases these structures appeared to be actually connected with the nucleus through a tube-like structure. The elongate-shaped inclusion bodies appeared granular in consistency, while the spherical-shaped inclusion bodies retained the stain more uniformly. The elongate type measured 14–26 μ in length and 3.0–4.6 μ in width, while the spherical and oval types measured 2.0–7.7 μ in diameter.

Spherical to amoeboid inclusion bodies attached to or lying near the cell nucleus were also observed by KUNKEL⁵ and BREMER⁶ in the cells of maize plants infected with sugar-cane mosaic virus. No information is, however, available regarding the size of these inclusion bodies⁷.

Zusammenfassung. Die Epidermiszellen von mit Mais-Mosaik-Virus infizierten Maisblättern enthalten runde oder längliche Einschlusskörper, welche meist dem Kern anhaften oder nahe bei diesem liegen. Sie erscheinen nach Giemsa-Färbung rosa bis purpurn gefärbt. Die Abmessungen der länglichen Einschlüsse betragen 3,0–4,6 · 14–26 μ , der Durchmesser der runden 2,0–7,7 μ .

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¹ B. L. CHONA and M. L. SETH, Indian J. agr. Sci. 30, 25 (1960).

² Y. C. PALIWAL and S. P. RAYCHAUDHURI, in press.

³ J. G. BALD, Phytopathology 39, 395 (1949).

⁴ T. E. RAWLINS, Phytopathology 47, 307 (1957).

⁵ L. O. KUNKEL, Bull. exp. Sta. Hawaii Sugar Planter's Assoc. Bot., Ser. 3, 44 (1921).

⁶ G. BREMER, Meded. Proefstat. Java Sinkerind 11, 337 (1926).

⁷ Our thanks are due to Dr. G. SWARUP, Plant Pathologist, for helping in photomicrography.

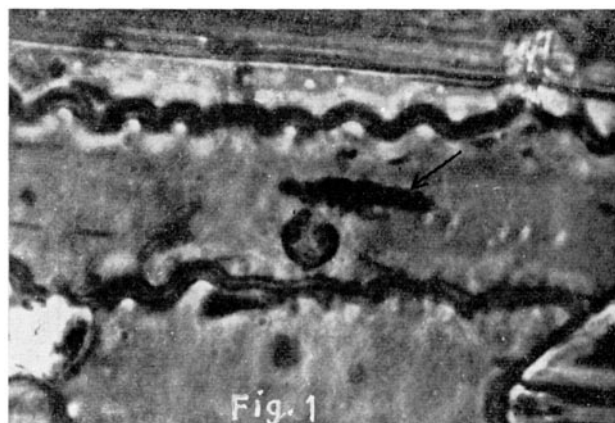


Fig. 1. Elongate shaped intracellular inclusion (arrow) in the epidermal cell of mosaic affected leaf of maize plant. (Magnification: approx. $\times 2560$.)

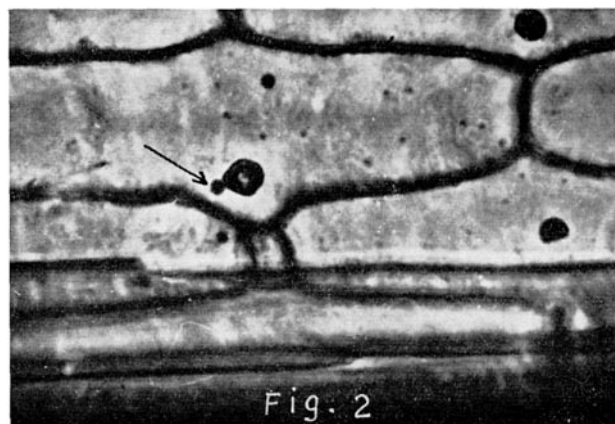


Fig. 2. Spherical shaped intracellular inclusion (arrow) in the epidermal cell of mosaic affected leaf of maize plant. (Magnification: approx. $\times 2560$.)

Synthetic Peptides Related to Eledoisin¹

In previous papers^{2,3} the chemical data and the biological actions of a large group of synthetic peptides related to eledoisin were presented. We wish now to report briefly on a new group of peptides which throws further light on the problem of structure-activity relationship.

From the Table the following conclusions can be drawn:

(1) The methioninamide residue can be replaced with a variety of alkylhomocysteinamide residues: in all compounds tested the biological activity was found to be enhanced when the alkyl group was larger than the methyl. Maximum activity was observed in compounds No. 2, 3