

BRIEF COMMUNICATION

Virus like Particles in *Ficus elastica* ROXB.

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Since 1960 a serious disease of *Ficus elastica* ROXB. has been observed in Czechoslovakia. Preliminary observations indicate the spread of the disease by cuttings and the possibility of graft transmission (SMOLÁK 1962). Diseased plants do not alter symptoms, being grown in different soil or under different temperature. Elongated virus-like particles present in the sap of diseased plants presaged the virus origin of the disease (SMOLÁK and BRČÁK 1967).

Symptoms in *F. elastica* (Figs 1, 2, 3, 4) are usually represented by yellowish ringlike spots developing later a necrotic centre. The elder diffuse blotchs often develop a cork-like surface. Necrotic areas are brown or brown-black. Sometimes, some leaves show implications of mosaic between veins and a mild curling or vein-clearing.

Electron microscopic investigation carried out in March enabled us to discover two kinds of virus-like particles present in chlorotic areas or near necrotic spots:

(a) Flexible elongated particles, 12—13 nm in diameter, occurring usually in clusters (Fig. 5). Their length could be determined only with difficulty, because only 57 of the particles could be measured precisely. 56 % of them were 370 to 640 nm long; the estimated normal length might be about 500 nm.

(b) In other specimens, rigid rod-like particles were found. Their length varied from 64 to 314 nm (Fig. 6). The measurement of the length of 149 particles showed distribution into three peaks belonging to 98, 181, and 281 nm (Fig. 7). The shape and size of these particles resemble the rattle virus.

Both kinds of particles did not occur in individual specimens simultaneously, with one exception only. The relation of the described particles to any symptoms in plants cannot be confirmed yet, because some other plants (with similar symptoms) which were examined in April did not contain any

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virus-like particles. For instance in three plants of *F. elastica* showing (1) diffuse mild chlorosis and cork-necrosis (2) dense yellow mosaic and necrosis near the midrib, and (3) diffuse yellow chlorosis and necrosis, and in one plant of *F. bengalensis* showing chlorosis and marginal necrosis no virus-like particles

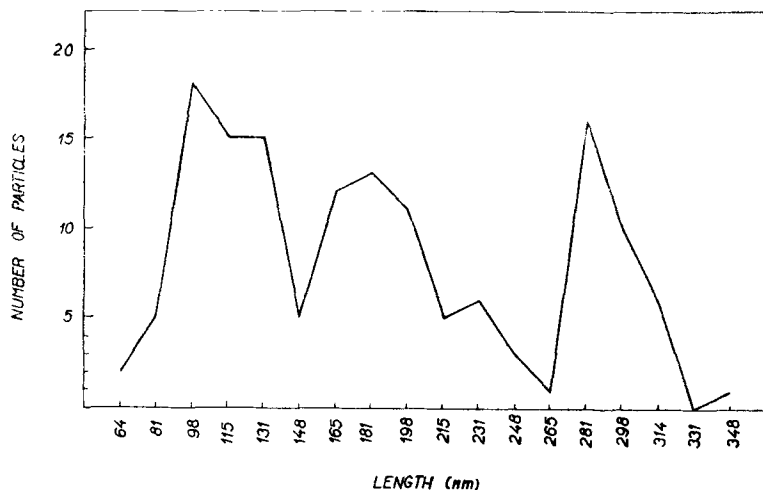


Fig. 7. Length distribution of rodlike particles from *F. elastica* ROXB.

could be found. In spite of this, we suppose that the particles found represent evidence of two virus infections not yet recorded for *F. elastica*.

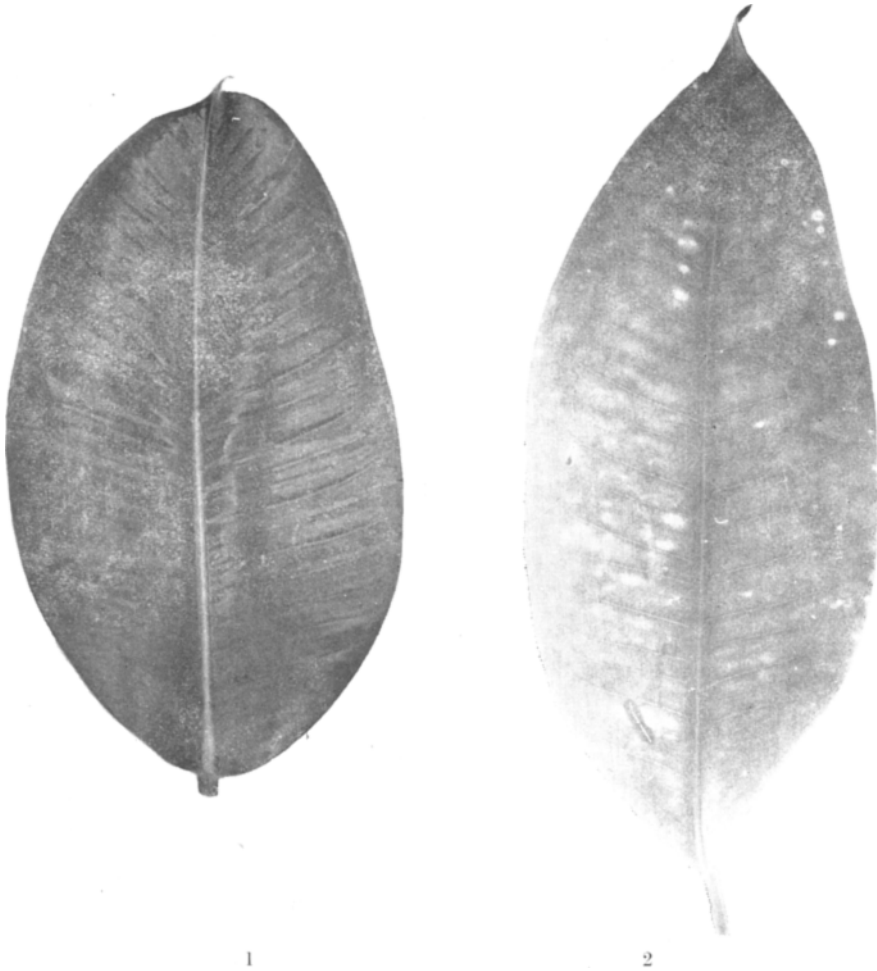
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V některých listech *F. elastica* s chlorotickými, mozaikovými a nekrotickými příznaky byly zjištěny virům podobné částice dvou typů: (a) vláknité částice dlouhé 370—640 nm (průměrně 500 nm) a 12—13 nm tlusté a (b) rovné tyčkovité částice s nejčastější délkou 98, 181 a 281 nm, které připomínaly "rattle" virus. Částice obou typů se obvykle nevyskytovaly společně v jedné rostlině a nebyly zjištěny ve všech rostlinách s chlorotickými a nekrotickými příznaky.

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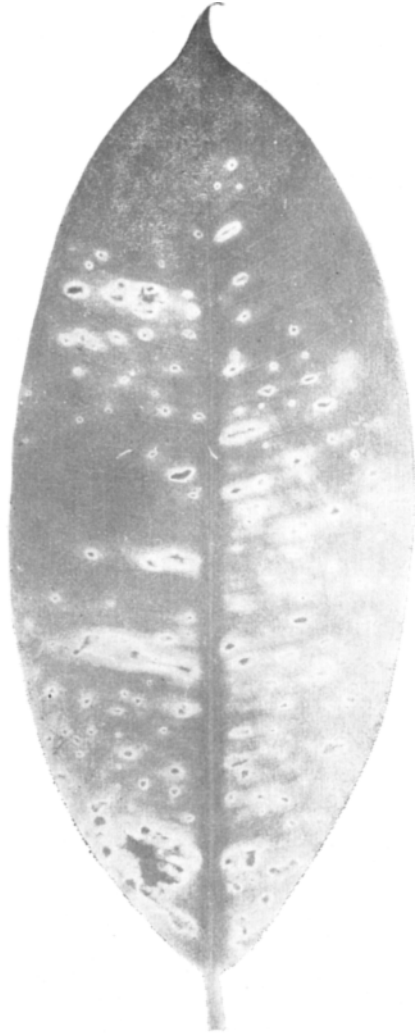


Figs 1, 2, 3, 4, Chlorotic and necrotic symptoms in leaves of *Ficus elastica* ROXB. (Photograph by Z. Rumpál.)

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Fig. 5. Electron micrograph of elongated flexible particles from *F. elastica* ROXB. (50,000 $\times$)

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Fig. 6. Electron micrograph of rigid rodlike particles from *F. elastica* ROXB. (50,000 $\times$)

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В некоторых листьях *F. elastica* с хлоротическими, мозаичными и некротическими признаками были найдены вирусоподобные частицы двух типов: а) волокнистые частицы длиной 370—640 нм (в среднем 500 нм) и 12—13 нм в толщину и б) прямые, палочковидные наиболее часто длиной в 98, 181 и 281 нм припоминающие вирусы типа «gattle». В одном растении обычно бывали обнаружены лишь частицы одного типа. Вирусные частицы находили не во всех растениях с хлоротическими и некротическими признаками.