

Bacterial brown spot of *Phalaenopsis* orchids in the Philippines

A causal bacterium was isolated from diseased *Phalaenopsis* leaves collected from the campus of the University of the Philippines at Los Baños. Studies of the bacteriological characters were made according to the methods outlined by the Society of American Bacteriologists (1957), unless otherwise indicated. The characters of the bacterium causing brown spot of *Phalaenopsis* orchids under consideration are similar to those of *Pseudomonas cattleyae* (Pavarino) Savulescu.

The disease appears first as small, water-soaked lesion on the leaves. These lesions increase in size rapidly, changing from light brown to dark brown in color with age. The tissues surrounding the older spots exhibit

light green to light yellow irregular halo. Spots coalesce and form irregular patches of dark brown to black areas of dead tissues. When the conditions are favorable for disease development, the disease attacks the crown and kills the plant.

Bacteriological characters:

Rods: 0.5×1.0 —2.0 microns, with round ends, occurring singly or occasionally in pairs, motile by means of a single polar flagellum or rarely bipolar flagella.

Gram negative.

Poly-B-hydroxybutyrate: positive.

Aerobic.

Nutrient agar colonies: grayish white, circular, convex, entire, smooth, butyrous.

Nutrient agar slant: growth grayish white, filiform, non fluorescent, odorless, brittle to viscid, medium unchanged.

Nutrient broth: growth odorless, moderate clouding, viscid sediment, thin pellicle.

Fermi's solution: good growth.

Chromogenesis: no pigment in Clara's medium or on medium B of King, Ward and Raney. Gelatin not liquified.

Fresh milk and litmus milk unchanged.

Ammonia produced.

Nitrates reduced to nitrites.

Indol production: negative.

Hydrogen sulfide production: negative.

Pectolytic activity: positive.

Starch hydrolyzed.

Glucose metabolized fermentatively in Hugh and Leifson's medium.

Levan formation: negative.

Oxidase reaction: positive.

Arginin dihydrolase: negative.

Tween 80 hydrolysis: positive.

Acid but no gas from fructose, galactose, glucose, glycerol, mannitol, sorbitol and xylose.

No acid or gas from arabinose, dextrin, escurin, inositol, inulin, lactose, maltose, mannose, raffinose, rhamnose, saricin, soluble starch, sucrose and trehalose.

Optimum temperature 29.5°C , minimum temperature 7.0°C and maximum temperature 39.5°C .



Plate 1. Bacterial brown spot of *Phalaenopsis*

Left : Early symptom

Right : Advanced symptom

Lower : Causal bacterium

- 1) Ark, P. A. & Thomas, H. E. : *Phytopathl.*, 30. 695-698 (1946).
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- 3) Elliot, C. : Manual of Bacterial Plant Pathogens. Waltham, USA (1951).
- 4) Society of American Bacteriologist : Manual of Microbiological Methods. McGraw Hill Co. (1957).

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