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VIRAL AND VIROID DISEASES

First report of *Bean common mosaic virus* in yam bean [*Pachyrhizus erosus* (L.) Urban] in Indonesia

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Abstract Severe mosaic with leaf malformation and green vein banding was observed on yam bean in West and Central Java, Indonesia. Virions of the causal virus were flexuous filaments, about 700 nm in length, with a coat protein of 30 kDa. The virus was transmitted by mechanical inoculation and by aphids in a nonpersistent manner. The nucleotide sequence of the coat protein gene had the highest identity with that of *Bean common mosaic virus* (BCMV, genus *Potyvirus*) isolate VN/BB2-5. Based on demarcation criteria, including the genome sequence and host range, we tentatively designate this isolate as BCMV-IYbn (Indonesian yam bean).

Keywords Nucleotide sequence · *Bean common mosaic virus* · *Pachyrhizus erosus* · *Potyvirus*

Yam bean [*Pachyrhizus erosus* (L.) Urban, Fabaceae], a horticultural crop in several areas of Indonesia, is used in Indonesia as fruit salads and cosmetic materials. The seeds and leaves are also used as botanical insecticides. Besides these beneficial roles, the yam bean is a symbiont with nitrogen-fixing bacteria and can therefore act as a good source of nitrogen in the soil (Sorensen 1996). In June 2004, viral-disease-like symptoms were observed during a survey of many yam bean fields in Bogor, West Java, and Prembun, Central Java, in Indonesia. Mosaic symptoms with green vein banding and leaf malformation were frequently observed (Fig. 1), affecting 14–100% of the plants in Bogor and 20–100% in Prembun. A poty-like virus was inferred to be the possible cause of the viral-disease-like symptoms. Previously, Sorensen (1996) reported that a potyvirus, *Bean common mosaic virus* (BCMV) might become a serious problem locally on cultivated yam bean in Tonga, Costa Rica, Ecuador and Thailand. However, Sorenson (1996) did not describe the biological or molecular characteristics of the BCMV infecting yam bean.

Since we had failed to find local lesion hosts to isolate the virus in preliminary studies, we first diagnosed a diseased plant serologically. Hereafter in this study, the virus source in all experiments except for some seed transmission tests was an infected single yam bean plant from a field in Bogor. The sap from the plant was serologically tested in an enzyme-linked immunosorbent assay (ELISA) using several antisera against viruses infecting legumes such as *Cucumber mosaic virus* (AS-0475; DSMZ, German Resource Center for Biological Material, Braunschweig, Germany), *Cowpea aphid-borne mosaic virus* (AS-0417; DSMZ), BCMV (AS-0159; DSMZ), *Soybean mosaic virus* (AS-0543; DSMZ) and *Bean yellow mosaic virus* (AS-0471; DSMZ) and nonlegume-infecting potyviruses such as *Chili veinal mottle virus* (AS-0122; DSMZ), *Turnip mosaic virus* (AS-0132; DSMZ), *Papaya ringspot virus* (PRSV, CAB-53500; Agdia, Elkhart, IN, USA) and *Watermelon mosaic virus* (WMV [synonyms Watermelon mosaic virus 2], CAB-54000; Agdia) and against the

The nucleotide sequence reported is available in the DDBJ/EMBL/GenBank databases under accession number AB289438.

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