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# First report of a '*Candidatus* Phytoplasma asteris'-related strain associated with *Melia azedarach* phyllody in India

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Chinaberry tree (*Melia azedarach*), also known as bead tree and belonging to the family Meliaceae, is an important ethnomedicinal tree with a wide natural distribution (Ntalli *et al*., 2010). Its roots, stem and leaves possess various medicinal properties and have applications in various types of medicine.

Chinaberry trees showing phyllody-like symptoms and virescent flowers were observed in Narayangoan (Pune), Maharashtra, in April 2018. Samples of four plants with symptoms and four without symptoms (Figs. 1-2) were collected and tested to detect the presence of phytoplasmas and for further molecular characterisation. Total genomic DNA was isolated from petioles of both healthy and infected plants using a DNeasy Plant Mini Kit (Qiagen, Germany). PCR was performed using P1/P7 phytoplasma-specific universal primers followed by nested PCR with R16F2n/R16R2 primers (Deng & Hiruki, 1991; Schneider *et al*., 1995; Gundersen & Lee, 1996). Bands of the expected size (c. 1.8 and 1.2 kb, respectively) were obtained in samples from all symptom-bearing plants but not in the symptomless ones. The 16Sr DNA sequence amplified from a representative sample from a symptomatic plant was deposited in GenBank (Accession No. MN830223). Sequence comparison by BLAST analysis showed the highest sequence identity with members of the 16SrI phytoplasma group (aster yellows), such as *Cocos nucifera* lethal wilt phytoplasma (KY814724), Sandal spike phytoplasma (MK627541), *Phyllanthus emblica* witches' broom phytoplasma (MK627538), Sugarcane white leaf phytoplasma (MK627531) and *Santalum album* phytoplasma (MG865436). Phylogenetic analysis (Fig. 3) using the neighbour-joining method (MEGA X software) showed that the *Melia azedarach* phytoplasma sequence clustered within group 16SrI, subgroup B. Virtual RFLP analysis using *i*PhyClassifier (Zhao *et al*., 2009) further confirmed that the *Melia azedarach* phytoplasma sequence shares 99.8% identity with that of '*Candidatus* Phytoplasma asteris' reference strain (M30790), and that the phytoplasma is a '*Candidatus* Phytoplasma asteris'-related strain, belonging to the 16Sr group I, subgroup B.

To our knowledge, this is the first report of '*Candidatus* Phytoplasma asteris' (16SrI-B) affecting *M. azedarach* in India. This finding holds significant importance for future epidemiological studies since *M. azedarach* could be an alternate host for phytoplasma (16SrI-B group) which infects several important vegetable crops cultivated in the country.

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Figure 1

Figure 2

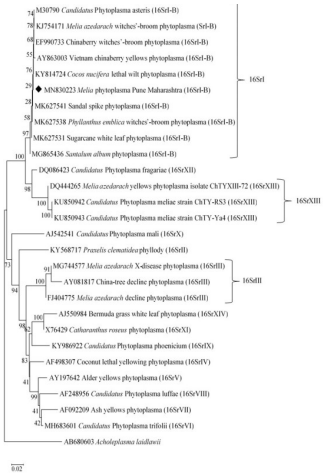


Figure 3

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