

## The first report of *Stenotrophomonas* sp. associated with canker and leaf spot disease of stone fruits in Iran

H. HABIBI and P. KHODAYGAN<sup>1\*</sup>

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In September of 2012 some bacterial strains were isolated from peach (*Prunus persica*), apricot (*Prunus armeniaca*) and sour cheery (*Prunus cerasus*) trees with leaf spot, canker and dieback symptoms on twig and stem in Alborz province. The symptoms were similar to those caused by *Pseudomonas syringae* pv. *syringae* (Pss) and *Xanthomonas arboricola* pv. *pruni* which have been previously reported in north of Iran (Aldaghi, et al., 2010; Mahmoudiet al., 2012). The smooth, pale yellow and round, mucoid colonies were recovered from symptomatic tissues on sucrose nutrient agar (NAS). For pathogenicity tests, ten detached young leaves of peach, apricot and cherry (*Prunus* sp.) were separately placed on 1% agar plate and sprayed with strains isolated from infected tissues in Iran and three type strains of *X. a.* pv. *Pruni* (ICMP17186), *Pss* (ATCC19310) and *Erwinia amylovora* (ICMP1540) at  $1 \times 10^8$  CFU/ml. Bacteria were identified on the basis of the biochemical and molecular characteristic (Palleroni, & Bradbury., 1993; Schaad et al., 2001). Ice nucleation activity measured by the droplet freezing method. Based on biochemical tests, none of isolated bacteria were identified as *Pss* or *X. a.* pv. *pruni*. All strains induced a hypersensitive response in tobacco. Representative strains were gram-negative, oxidative negative and also negative for formation of levan and casein, hydrolysis of starch and tyrosine, the reaction of isolates for indole production, reducing substance from sucrose, production of urease, oxidase, lecithinase, arginine dehydrolase, reduction of nitrate, growth on 5% on NaCl and acid production from, maltose, lactose and trehalose were negative. The isolates were positive for, production of H<sub>2</sub>S from cysteine and peptone, protease, hydrolysis of gelatin and growth at 37°C. Induction of fast hypersensitive reaction on tobacco and geranium may be considered as the potential of the isolates in causing disease in one or more plant species. The leaves inoculated with isolates developed leaf spots similar to those observed in the field. The same bacteria were reisolated from symptomatic leaves and identification was confirmed. The 16S rDNA was amplified by PCR using primer pairs 63f and 1384r (Marchesi et al., 1998). PCR products were sequenced and sequences were aligned and compared with those deposited in GenBank. 1100 nucleotides of sequences of the strain number 106 (accession No. KF752591) and 81 (accession No. KF7440537) showed 99% identity with those of *Stenotrophomonas* isolates. All of isolates were positive for ice nucleation. Most of ice nucleation active bacteria are epiphytic and exist almost in all plants. The ability of bacteria to form ice nucleus is very important. Ice nucleation active bacteria can catalyze ice formation at temperatures as high as -2°C and have significant role in freezing injuries of cold sensitive plants. The association of two species of this genus, including *S. maltipholia* and *S. rhizophila* with citrus blast have previously been reported from northern Iran, and their ice nucleation activity of demonstrated (Alimi et al., 2012). In that study the possibility of pathogenicity of collected strains has not been evaluated. This is the first report on, association of *Stenotrophomonas* sp. with canker and leaf spot disease of stone fruits trees in Alborz province of Iran.

\*\* Corresponding author's E-mail: Pkhodaygan@vru.ac.ir

1. Department of Plant Protection, Faculty of Agriculture, Vali-e-Asr University of Rafsanjan.