

First report of *Pestalotia disseminata*, the causal agent of feijoa fruit rot in Iran

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Feijoa (*Feijoa sellowiana* Berg., Myrtaceae), often known as pineapple guava, is an evergreen tree which produces tasty, green/yellow fruit. It is native to South America and has spread all over the world as a fruit and ornamental tree (Watson, 2010). The feijoa is recently grown as an exotic fruit crop in northern Iran, on the southern coast of the Caspian Sea. Since mature fruit have a tendency to fall from the tree and become injured, fruit rots is considered as a major problem in feijoa production (Ogawa & English, 1991). Several fungi including *Pestalotia* spp. have been reported as the causal agent of feijoa fruit rot (Mkervali, 1970). Fungi belonging to genus *Pestalotia/Pestalotiopsis* are common in tropical and temperate regions, usually occur as saprobes or endophytes and may cause plant disease (Arrhenius and Langenheim, 1986; Maharachchikumbura *et al.*, 2011). The objective of the present study was isolation and identification of the causal pathogen of feijoa fruit rot in northern Iran.

In October 2014, a brown rot symptom was observed on mature fruits at a feijoa orchard located in Amol, Mazandaran Province (36° 28' 550" N, 52° 27' 730" E). Fruits were washed with tap water and pieces of infected fruit (0.5 × 0.5 cm) were surface disinfected with 0.5% sodium hypochlorite for 2 min, rinsed with sterile distilled water, plated on potato dextrose agar (PDA) with 0.2 g liter⁻¹ of streptomycin sulfate and incubated at 25°C in dark for 7 days. The growing edges of fungal colonies from the pieces were transferred aseptically to fresh PDA plates and then purified with single spore method.

The fungal colony was colorless, turning cottony white with abundant scattered acervuli containing black, slimy spore masses (Fig. 1a). Colonies attained

5.2 cm in diameter on PDA after 5 days at 25°C and produced abundant, white, aerial mycelium.

The black acervular conidiomata containing abundant conidia that were five-celled, straight or slightly curved, fusiform, smooth, constricted at septa and 19-25 × 6-7.5 μm (*n* = 50); three median cells were versicolorous (the upper two were slightly darker than the lower one), olive to brown and end cells were hyaline; two to three unbranched appendages (setulae) on the apical cell, 8-20 μm long, and one appendage on the basal cell (pedicel), 4-9 μm long (Fig. 1b). On the basis of these morphological characteristics, the fungus was identified as *Pestalotia disseminata* Thüm. (Syn. *Pestalotiopsis disseminata* (Thüm.) Steyaert) using the monograph by Guba (1961) and was deposited in the Iranian Fungal Culture Collection as IRAN 2147C.

To confirm pathogenicity, feijoa fruits were inoculated with *P. disseminata* using two techniques *i.e.* injecting and spraying of conidial suspensions. Fruits of the same size were surface sterilized in 0.5% NaOCl for 2 minutes, washed with sterile distilled water and dried with sterile filter paper. 100 μl of the conidial suspension in sterile distilled water with a concentration adjusted to 10⁴ conidia ml⁻¹ was injected into the fruits. Meanwhile, 5 ml of the suspension with a concentration of 10⁵ conidia ml⁻¹ containing 0.05% Tween 20 was sprayed on intact as well as artificially injured fruit (a 5 mm wound was made using a sterile scalpel). In each method, fruits treated with sterile distilled water served as control. After the inoculations, fruits were placed on a foam tray containing sterilized filter paper at 25°C. The filter paper was kept wet during the experiment. After 7 days, fruit rot induced on inoculated fruits either by injection (Fig. 1c) or spraying (Fig. 1d) of conidial suspensions were identical to those observed in the orchard, whereas intact fruits which were sprayed with conidial suspension and non-inoculated control fruits did not show any symptoms. In order to fulfill Koch's postulates, the pathogen was reisolated from diseased fruits.

Pestalotia disseminata was previously reported as the causal agent of guava scab in Hawaii (Keith *et al.*, 2006) and grey blight of *Persea bombycina* Kost., the primary food plant of muga silkworm, in India (Das *et al.*, 2010). However, to our knowledge, this is the first report of *P. disseminata* causing fruit rot disease on feijoa for the mycobiota of Iran.

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Fig. 1. *Pestalotia disseminata* the causal agent of feijoa fruit rot. **a.** Colony appearance with scattered black acervuli. **b.** conidia. **c.** Longitudinal section of feijoa fruits; showing severe brown rot symptom which was injected with conidial suspension of *P. disseminata*, healthy fruit or control (left) and diseased fruit (right). **d.** Healthy (left) and diseased fruit (right) showing brown rot which was wounded and sprayed with conidial suspension of *P. disseminata*

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