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Report of a rare stinkhorn fungus, *Itajahya rosea* from Iran: The first record of genus *Itajahya* for Iran

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Specimens of phalloid fungi, collected from Kerman province, south of Iran, were characterized morphologically and identified as *Itajahya rosea* (Delile) E. Fisch (*Phallaceae, Phallales, Agaricomycetes, Agaricomycotina, Basidiomycota*). The main characteristic features of specimens were as have been described as follow:

Young fruit-bodies were egg shaped, ovate to sub-globose, 3-6.5 cm in diameter, white to greyish white in color. The preliminary stages of the stipe and gleba can be seen inside the young fruit-bodies via cross-sectioning. Splitting the eggs (which usually happens during the night time), resulted in appearance of fruit bodies in the form of a stipe and a cap-like spore bearing gleba at the apex. Stipe was cylindrical, spongy, pinkish white to pinkish, hollow, tapering at the base and top, reached up to 10 cm in height and up to 3 cm in width in base, enclosed by volva.

Receptaculum up to 5.5 cm diameters, fully covered by gleba. Gleba spongy, greenish-brown to black brown, turning blackish with age, soft, mucilaginous and sticky, with strong odor. The top surface of the gleba covers by "calyptra" that is the remnant of fruit body splitting. A fully developed volva, completely surrounds the stipe base (Fig.1). Basidiospores ellipsoid, hyaline, smooth, 3-4 × 1.5-2 µm in dimension. Phalloid form of fruit-body, color and texture of the gleba, presence of the calyptra and pinkish color of stipe were the main morphological characteristics of the specimens for differentiation. This is the first report of species of the genus *Itajahya* in Iran.

Specimen examined: Iran, Kerman province, Jiroft, Jiroft Agricultural Research Center campus (near a felled tree of *Ziziphus spina-christi*), 25/3/ 2019, Najafiniya, (IRAN 18218 F).

Fungi of the family *Phallaceae* or stinkhorns are interesting and a particular group of mushrooms in the order *Phallales*, phylum *Basidiomycota*. The genus *Itajahya*, is a rare and lesser-known genus of the family *Phallaceae* that was characterized by Möller in 1895 for a fungus discovered in Brazil. The main characteristic that distinguishes *Itajahya* from other taxa of stinkhorn fungi is the presence of calyptra at the apex of the gleba (Ottoni *et. al.* 2010).

P. roseus was originally described from Egypt in 1813 (Delile 1813). Fischer in 1929 placed the species in the genus *Itajahya* Möller,1895, based on morphological characteristics and then, Kreisel (1996) included *Itajahya* as a subgenus of *Phallus* (Ottoni et al. 2010). Cabral *et al.* (2012) using the DNA sequence and phylogenetic analyses of *Phallus roseus*, moved species from *Phallus* and placed it as a species of the genus *Itajahya*. Later, Marincowitz *et al.* (2015) sequenced the DNA of the *Itajahya galericulata* and showed that it is phylogenetically separate from the *Phallus* and *Dictyophora* species. Their study also confirmed that *Itajahya rosea* and *I. galericulata* (type of the genus) are phylogenetically related and indeed both of them belonged to the genus *Itajahya* (Cabral *et al*. 2012, Marincowitz *et al*. 2015, Patel *et. al*. 2018).

Four species have currently been reported from rare genus *Itajahya* in the world: *Itajahya galericulata*, *I. rosea*, *I. hornseyi* and *I. argentina* (Hansford 1954, Patel *et. al*. 2018). *Itajahya rosea* is a rare fungal species in desert and semiarid regions recorded from Argentina, Brazil, Bolivia, Egypt, France, Ghana, India, Morocco, Pakistan, Paraguay, South Africa and Yemen (Borde *et al.* 2021, Campi Gaona *et. al*. 2017, Kreisel & Al-Fatimi 2008, Moreno *et al*. 2013, Ottoni et al. 2010).

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Fig. 1. *Itajahya rosea* (IRAN 18218 F): A, B, C & D. Fruit-bodies (calyptra can be seen at the top of the gleba), E. Egg shaped young fruit-bodies. Scale bars= 2 cm.

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