

Overall study on Iranian truffles

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Abstract

The Spring season in Iran, especially the months of April and May, is a thriving season for the wild harvesting and sale of fresh medicinal plants and mushrooms that are seen in the form of local markets and seasonal stores during the rainy season. Based on habitats of Iranian truffles, they can be classified in two groups including Desert truffles and Forest truffles. Based on our knowledge desert truffles are distributed in Northwest, West, East and Southern of Iran, specially in uncultivated area with special soil physicochemical properties. Our documented information shows the growth of desert truffles in more than 14 provinces of the country including Zanzan, Qazvin, areas of Tehran, Mazandaran and Golestan rangelands, East Azarbaijan; West Azarbaijan. Hamedan, Kordestan, Fars, Bandar abbas, Kerman and Sistan and Bluchestan. Based on macroscopic, microscopic and molecular analysis, *Terfezia* sp. and *Pico* sp. are two common genus of desert truffles. *Tuber aestivum* and *Tuber uncinatum* are two scientifically introduced genus for Iranin mycobiota.

Key words: Mushrooms, morphological characters, truffles.

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Introduction

Fungi are a special and distinct group of organisms with visible fruiting bodies (macrofungi). The best known examples of this group are excluded as mushrooms. One of the most important parts of the fungi is the cap and stalk, which is mostly visible on the ground mushrooms. Collection and consumption of wild edible mushrooms (WEM) has been elongated for thousands of years. Archaeological evidences in Chile and China attributes the consumption of wild fungi to over 13000 years ago (Rojase & Mansur, 1995). Based on evidences edible fungi were also collected from forests in ancient Greek and Roman times and highly valued. For instance, we know that truffles were appreciated during antiquity (Callot 1999). In China, the eating of wild fungi is reliably noted from 6,000–7,000 years ago (Wang, 1987). Now, they are collected, consumed and sold in over 85 countries worldwide (Murat et al., 2008). More than 2300 species of fungi categorized as useful wild fungi that 43 % of them are edible only, 35 % food only, 11 % food and medicinal , 6 % medicinal only, 4 % edible and medicinal (Boa, 2004). However, much of the information on the biology and ecology of edible fungi has been resulted from research in developed countries, but income from wild harvested mushrooms is one of important sources for local people in developing countries (Boa, 2004). Unlike to European dogs harvesters, Iranian Tubers are recognized and harvested by shepherds and skilled experienced local people using suitable wood or shovel or sharpened metal tools (Ammarellou et al., 2-11, 2014).

Study area

We focused on province of Zanjan for field studies and prepared collected specimens from other provinces of Iran. The province of Zanjan divided to 3 parts of field study including Tarom, Mahneshan and southern of Zanjan (near to Bijar-Kordestan).

Macroscopic and microscopic study

Based on key truffles identification protocols, all morphological, cytological and molecular analysis of collected truffles were managed (Ammarellou et al., 2007,2009, 2011, 2014).

Results

The view of habitats of *terfezia* producers area was shown in Fig.1 Based on our evaluation on habitats of Iranian truffles, Iranian truffles can be classified in two groups including Desert truffles and Forest truffles. Our published knowledge and field data showed that desert truffles are distributed in Northwest, West, East and Southern of Iran, specially in uncultivated area with special soil physicochemical properties. Our documented information shows the growth of desert truffles in more than 14 provinces of the country including Zanjan, Qazvin, areas of Tehran, Mazandaran and Golestan rangelands, East Azarbaijan; West Azarbaijan. Hamedan, Kordestan, Fars, Bandar abbas, Kerman and Sistan and Bluchestan (Fig.2) . Based on macroscopic, microscopic and molecular analysis, *Terfezia* sp. and *Pico* sp. are two common genus of desert truffles (Fig. 3). Moreover *Tuber aestivum* and *Tuber uncinatum* are two scientifically introduced genus for Iranin mycobiota.



Fig. 1. The view of terfezia producer area (A & B), Creating cracks in the soil due to the gradual growth of the terfezia in the soil depth (C).

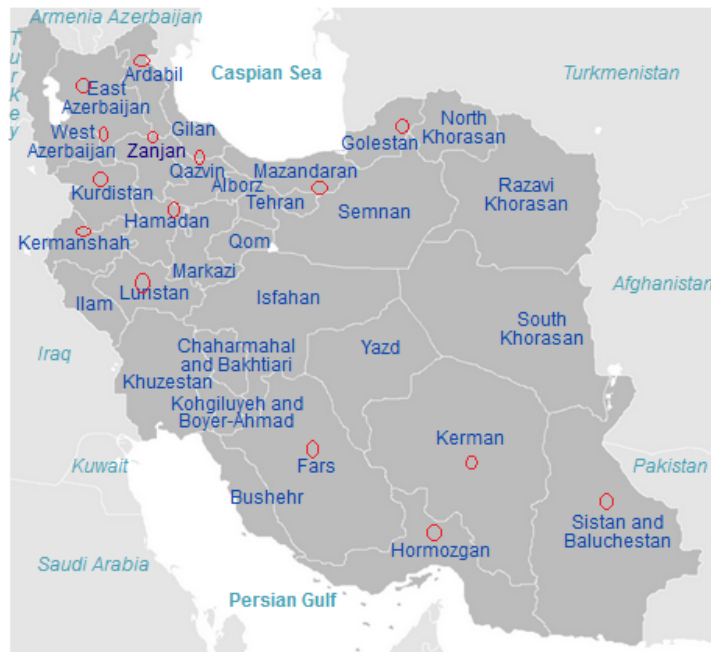


Fig. 2. Geographical distribution of Iranian provinces that produce most of terfezia



Fig. 3. Photos of some Iranian desert truffles.

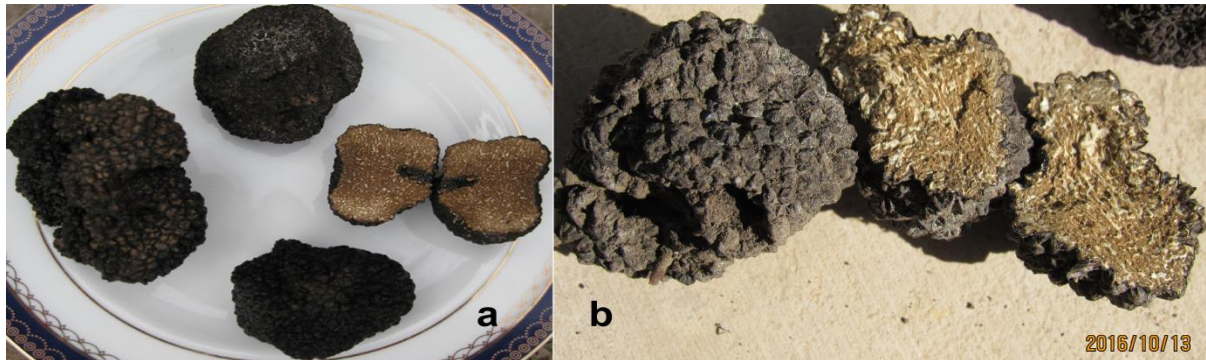


Fig.4. Morphological characteristics of *T. uncinatum*. a: fresh ascocarp & b: dried ascocarp

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