



ISOLATION OF ENDOPHYTIC MICROORGANISMS OF CHUCHUPATE (*Ligusticum porteri* Coulter & Rose), A MEDICINAL PLANT.

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Introduction. Chuchupate (*Ligusticum porteri* Coulter & Rose) is a perennial plant originary from the Sierra Tarahumara of Chihuahua, is well-known in the treatment of gastrointestinal disorders, bronchitis, pneumonia and tuberculosis, in the Mexican folk medicine (1). A sector that until the moment has been little studied in the medicinal plants is the relationship between endophytic microorganism-plant, it has been described as fungi and bacteria that asymptotically colonize the inner part of healthy plant tissues and provide an effective protection against biotic and abiotic stresses (2). Currently there aren't reports of endophytic microbiota associated to Chuchupate, increasing the great interest in knowing their endophytes and diversity of these.

The aim of the present work was to isolate the endophytic microorganisms of Chuchupate.

Methods. Healthy and asymptomatic stems and roots of Chuchupate were collected randomly from the region of the Alta Babicora in the Sierra Tarahumara of Chihuahua (November 2012). Each sample of tissues were used within 48 h from collection. All the samples were washed properly in running tap water. To eliminate epiphytic microorganisms, all the samples were initially surface sterilized by modifying the method described by Wiyakrutta *et al.* (2004) (3). The samples were surface sterilized by immersion in 70% ethanol for 1 m, 12% sodium hypochlorite solution for 10 m and sterile distilled water for 1 m two times. The surface-sterilized stems and roots were cut into small pieces (0.5 x 0.5 cm²) using a sterile blade and placed on sterile TSA and PDA (acidified with lactic acid) plates for incubation at 37°C for isolation of bacteria and fungi, respectively. After incubation, the endophytic microorganisms emerging out from the plant tissue were transferred to a sterile plate until obtained axenic cultures.

Results and discussion. 94 strains were isolated (Table 1), of which 58 are bacteria and 36 fungi. Colonies of bacterial isolates were characterized for colony morphology and Gram reaction. The fungi isolates were characterized for colony morphology and microscopic morphology. Fungi represented 24 filamentous fungi and 12 yeasts. In the case of bacteria, as reported by Ramesh (2009), the isolation of stem was greater than the root,

however, unlike this study, where is reported higher isolation of Gram-negative, our study found a higher isolation of Gram-positive. Several factors may explain these differences, including host specificity, geographical distribution, plant age, and tissue type (4).

Table 1. Number of Isolated endophytic microorganisms of stem and root from Chuchupate.

	Stem	Root	Total
Gram-positive Bacteria	35	18	53
Gram-negative Bacteria	4	1	5
Fungi	24	0	24
Yeast	3	9	12
Total	66	28	94

Conclusions. Isolation of 94 strains of endophytic microorganisms (fungi and bacteria) was achieved from Chuchupate, principally from stem than from root.

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