

Isolation and Characterization of Native Strains of Ensifer Meliloti From Provinces of Qom Province and Khorasan Razavi

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Background & Objectives: Nutrient enrichment in soil by N₂-fixing bacteria has been known for many years. Rhizobia are the most well known species bacteria that infect plant roots of legumes to fix nitrogen. Due to the increasing use of chemical fertilizers and their detrimental effects on human and environment, the aim of this study was isolation and identification of indigenous bacteria of *Ensifer meliloti* from some areas of Qom and Khorasan Razavi.

Methods: Bacteria were isolated from active nodules on the roots of perennial alfalfa (*Medicago sativa*) from farms in Qom and Khorasan Razavi. Suspensions of washed and disinfected nodes were inoculated on YEM (Yeast extract agar). Isolates were confirmed with nodulation test on alfalfa seeds varieties of Hamedani. Then bacteria were studied by some microscopic and biochemical tests such as gram reaction, indicator absorption in CRYMEN, growth in litmus milk and antibiotic sensitivity patterns.

Results: 40 bacteria were isolated from plants, all of which were gram-negative bacilli or coccobacilli with milky to cream mucoid colonies. Bacteria were catalase+, oxidase+ and motile. They were grown in the presence of Congo-red and their identification was easier in CRYEM due to reduced growth of saprophyte and to absorbing reagent. Some isolates produced acid in litmus milk. All bacteria were susceptible to tetracycline and streptomycin, some were sensitive to nalidixic acid and vancomycin and 29 were resistant to penicillin.

Conclusion: All bacteria were created nodules in root of alfalfa seed crops. Since *Ensifer meliloti* can strengthen soil and enhance the product naturally, isolation and identification of native strains could be a trigger for their mass production and inoculation to soil without Rhizobia to reduce the consumption of chemical fertilizers.

Keywords: *Ensifer meliloti*; Nitrogen Fixation; Alfalfa; Antibiotic Resistance