THE ENDOPHYTIC MICROBIOME OF IBERIAN HOLOPARASITIC *CISTANCHEPHELYPAEA* (OROBANCHACEAE) SEEDSINCOASTAL SALT MARSHES

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Abstract - Salt marshes are highly dynamic, biological diverse and valuable ecosystems with a wide range of valuable functions such as decomposition of organic matter, nutrient recycling, and removal/degradation of pollutants. In current study we aimed to identify overview of endophytic bacterial community of surface sterile seeds of Iberian *C. phelypaea* growing in coastal salt marshes in Iberian Peninsula, Portugal,whichthe only representative of the *Cistanche* genus that hasbeen reported in coastal salt marshes.The genus *Cistanche* includes 25 holoparasitic species which occur mainly in desert, semi-desert and halophytic habitats across Eurasia and North Africa. Generally, the species belonging to this genus require special environmental conditions for growing, i.e. extreme arid climate, depauperate soils, large temperature difference, intensive sunshine and less than 250 mm of annual precipitation. They parasitize mainly on the roots of host-plant species belonging to the Chenopodiaceae and more rarely on the Zygophyllaceae, Tamaricaceae or Plumbaginaceae. Many species belonging to genus *Cistanche* are endangered across their global range. These holoparasites contain numerous bioactive compounds such as phenylethanoid glycosides (PhGs), iridoids,galactitol, polysaccharides, oligosaccharides, volatile components, as well as lignin and its glycosides, flavonoids, alkaloids with a large broad medicinal applications. Due to its unique properties *Cistanche*species are wide cultivated plants in some regions in China. The seeds of holoparasitic *C. phelypaea* were colonized mainlyby diverse bacterial strains belonging to the phyla Proteobacteria, Actinobacteriota, Firmicutes and Bacteroidota. Newly classified and undiscovered taxonomic groups inhabited the *C. phelypaea*seeds as well. In the examined seeds,γ-Proteobacteria represented the most diverse phylogenetic groups. We also established the plant growth promoting (PGP) capacity of the bacterial isolates, such as indole production, organic acid production, siderophore and ACC deaminase activity. We succeeded to isolate bacterial strains belonging to Bacilli, Actinomycetes, α-, γ- and β-Proteobacteria and unclassified bacteria from surface sterile seeds of *C.phelypaea*. Most PGP positive reactions were recorded among *Bacillus* spp., *Paenibacillus* spp. and *Ralsonia* spp. Our results indicated that *C. phelypaea* seeds are colonized by halotolerant bacterial strainsthat may mitigate the adverse effects of salt stress in holoparasite plant.These bacteria should be assessed in future research as a source of novel and unique bioactive compounds or as novel bacterial species.

Keywords - Actinobacteria, Micromonospora spp., salinity, salt marshes, seed endophytes, PGP traits

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Competing interests
The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.