

## The effect of Cadmium and Lead treatments of some anatomical characteristics of Date palm *Phoenix dactylifera* L.cv. Barhi leaves.

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### Abstract

Heavy metals pollution of agricultural soils is considered one of a serious problem around the world; and the affected plants by such soils responded in different ways as a consequence of this exposure to heavy metals.

Present study has been performed to elucidate the effect of Cadmium (Cd) and Lead (Pb) treatments at different concentrations on date palm, Barhi cultivar; and their responses on anatomical levels. Results showed that the highest concentration of Cd (9 mg/kg) and Pb (276 mg/kg) led to a significant reduction in the size of the vascular bundles and conducting elements (Xylem and Phloem), the thickness of mesophyll, as well as, the size of parenchyma cells. Anatomical section of treated date palm leaves with both heavy metals revealed a dense distribution of tannin in leaf tissues resulted by heavy metals treatments at high concentrations, with more Tannins abundance at the edges of examined tissues, Both Cd and Pb treatments had no significant on epidermal and cuticle layers of treated leaves. Its noteworthy, that Cd and Pb treatments at low concentrations (3 and 100 mg/kg) respectively, had no significant effect on most analysed parameters according to LSD analysis at ( $P < 0.05$ ). here in, detained results proved that each of Cd and Pb at high concentrations induced significant change on anatomical levels of treated date palm

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Keywords: Anatomy; Heavy metals; pollution; Vascular bundles