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Photosynthesis Rates and Growth Responses of the Desert Shrub *Calotropis procera* to NaCl Salinity

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Abstract: Soil salinity is a major environmental constraint that limits plant growth and development. *Calotropis procera* is one of the plant species in vast areas of semiarid and arid regions worldwide subjected to harsh environments typically known with severe drought, high temperature and salt stress. To examine the effects of salinity on this plant species, a pot experiment was carried out in growth chamber at the Department of Biology, University of Taibah, at Al-Madina Al-Munwara, Kingdom of Saudi Arabia. Plants grown in plastic pots containing compost were subjected to four salt treatments; 0, 75, 150 and 300 mM NaCl. Photosynthesis and growth parameters, including plant height, number of leaves, leaf area and dry weight were evaluated. Growth was progressively declined, as salt concentration increased. Significant reductions were recorded in plant height, number of leaves and leaf area and plant biomass of all plant parts (stem, leaves and roots). NaCl significantly reduced the total fresh weight, but no effects on total dry weight were found. The photosynthetic capacity was significantly decreased under high saline condition.

Keywords: *Calotropis procera*, salt stress, photosynthesis efficiency, growth.

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