ANTIOXIDANT RESPONSE OF AFRICA YAM BEAN (*SPHENOSTYLIS STENOCARPA*) TO CADMIUM-INDUCE STRESS

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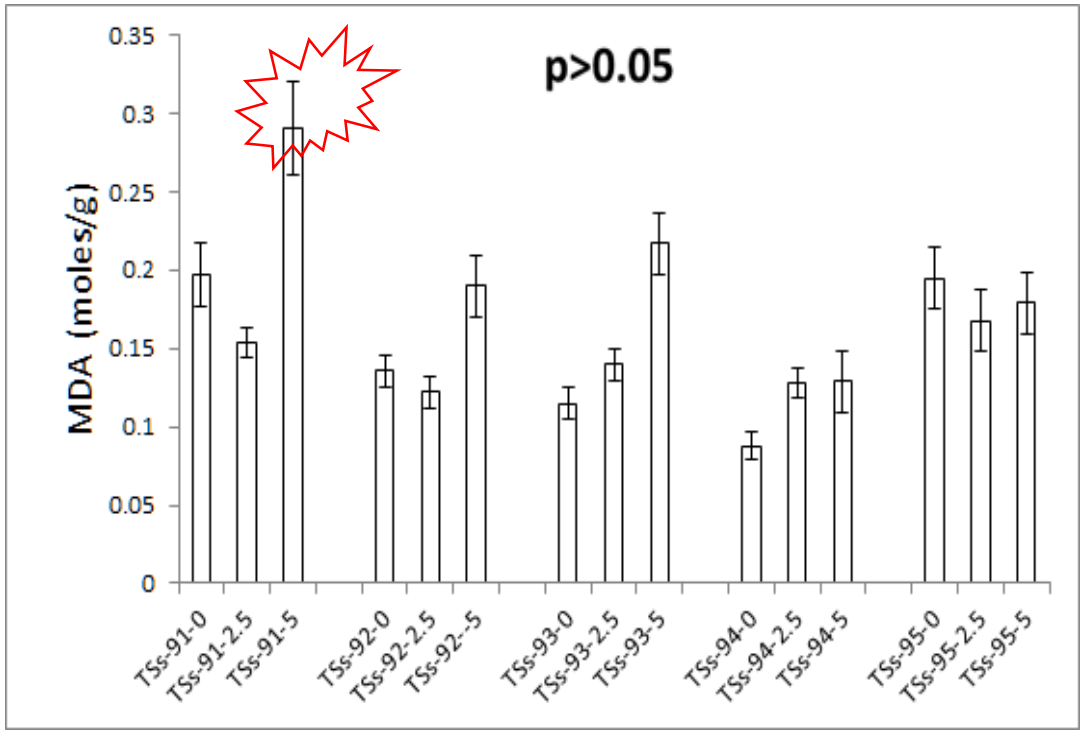
introduction

- Metals occur both naturally and by anthropogenic source
- They are present in the environment with a wide range of oxidation states and coordination numbers, and these differences are related to their toxicity. Some metals are essential others are not (Ohanmu *et al.*, 2017).
- HMs can be highly reactive
- HMs can promote oxidative damage
  - by direct increase in cellular function by concentrated ROS
  - by reducing the cellular antioxidant capacity (Ohanmu *et al.*, 2018)
- The ROS results to unbalanced cellular redox status.
- The storage of metals by cellular detoxifying mechanisms makes them available for assimilation by the biota and biomagnification via the food chain.
- Plants respond to HMs
- This study investigated the antioxidant response of *S. stenocarpa* to cadmium-induce stress.

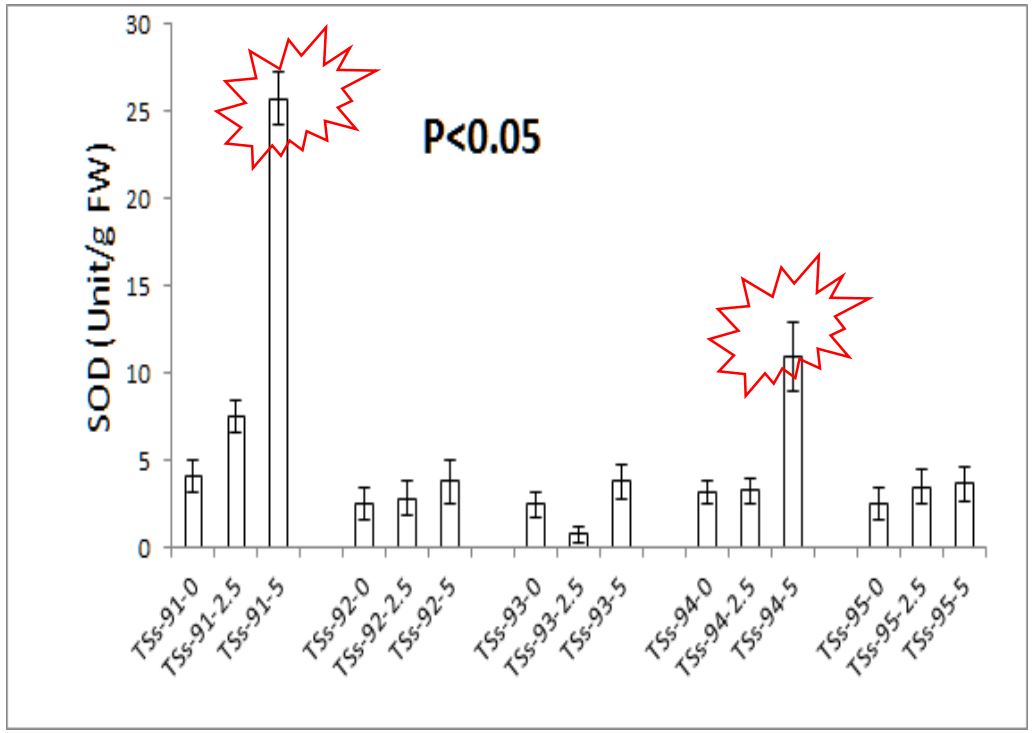
Materials and methods

- **Soil and land preparation**
- Soil polluted with Cd at 3 levels – subESV, 2.5ESV and 5ESV
  - ESV is ecological screening value (ESV) of the Cd (Efroymson *et al.*, 1997)
- **Seed collection**
- **Experimental setup**
- **Data collected/Duration**
- The plants' antioxidant defense mechanism were investigated according to the following authorities, AsA (Huang *et al.*, 2005); Lipid peroxidation by MDA (Heath and Packer, 1968; Hossain and Fujita, 2010); CAT, Proline, SOD (Hossain *et a*l., 2009; Ranganayakulu *et al.*, 2013); and Tocopherol (Ruch *et al.*, 1989; Yu *et al.*, 2003).
- **Statistics**

Result and discussions

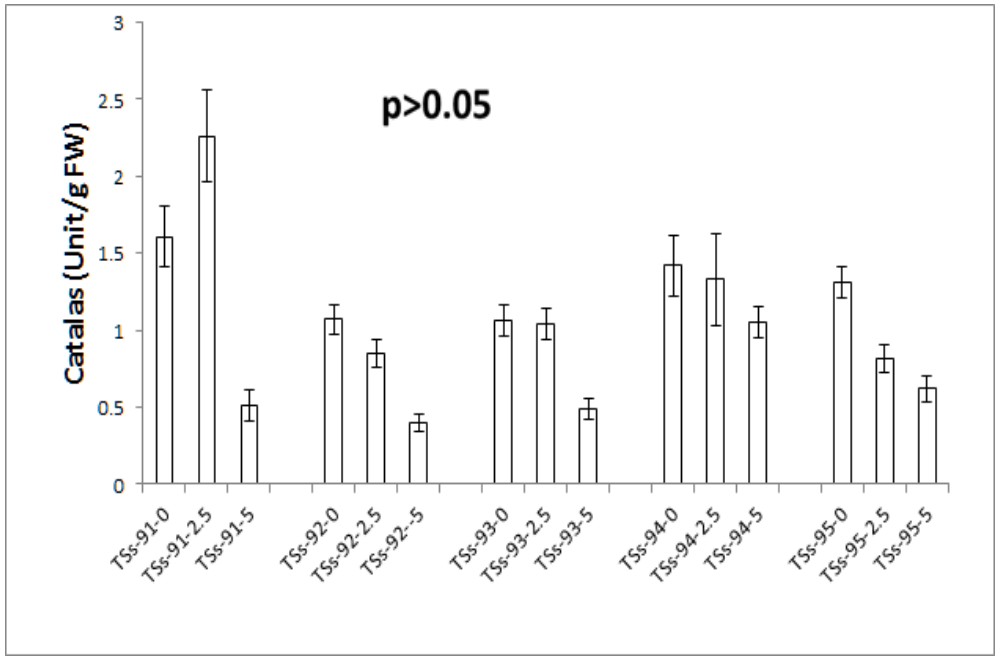


(a)

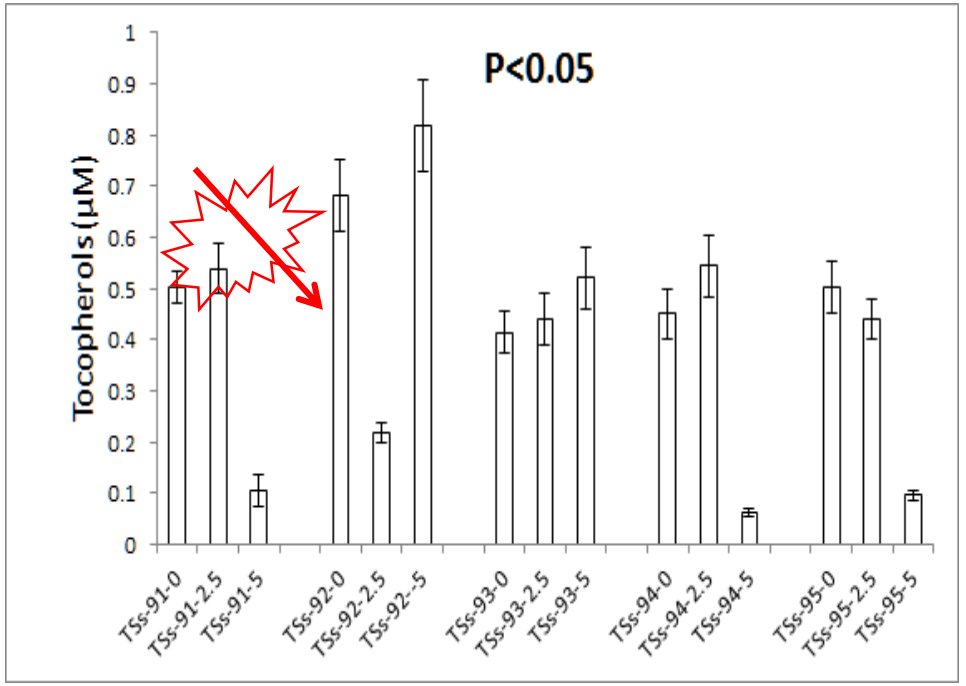


(b)

Fig 1: (a) Mallondiadelhyde content (b) superoxide dismutase activities of Africa Yam Bean accessions to cadmium induce-stress



(a)



(b)

Fig 2: (a) Catalase activity (b) Tocopherol content of Africa Yam Bean accessions to cadmium induce-stress

Conclusion and recommendation

- The significant increases in antioxidant activities of the metal exposed plants compared to their control counterpart suggested possibility of free radicals instigated by Cd presence.
- This further gave trendies to plants' resistant capacities in metal contaminated soil

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reference

- **Ohanmu EO,** Ikhajiagbe B and Anoliefo GO (2017). Assessment of Growth and Yield Responses of African Yam Bean (*Sphenostylis stenocarpa*) to Cadmium Pollution. *Nigeria Journal of Life Science,* 7(2): 184-198.
- **Ohanmu EO**, Ikhajiagbe B and Edegbai BO (2018). Nitrogen distribution pattern of African Yam Bean (*Sphenostylis stenocarpa*) exposed to cadmium stress. *Journal of Applied Science and Environmental Management, ,* 22 (7): 1053 –1057

Thank you