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Effects of Heavy Metals on Bean Plant

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Abstract: In this study, the effects of heavy metals on the bean plants have been investigated. Heavy metals cause environmental pollution. Various drugs and fertilizers in agriculture and in particular fields can lead to heavy metal dirty thereto. Heavy metal elements are essential nutrients for plants. Normal concentrations of heavy metals serve as a cofactor necessary for the structure of proteins and enzymes that play an important role in plant grow than development.

Keywords: *Bean Plant, Heavy Metals, Environmental.*

Introduction

The biological elements are primary components of biological structures; however, they can exert toxic effect when their concentrations are higher than those needed for biological functions (Gecit *et al*., 2011; Sayır *et al*., 2013; Gonullu *et al*., 2015).Heavy metals reach various vegetables mixed with various juices and thus these fruits and vegetables are exposed to heavy metals. Heavy metals, usually, goes to the plant by mixing industrial waste waters. The studies show that more heavy metal accumulation in plant tissue changes the enzyme activity.

Inaddition, it is reported recently that, the property of heavy metals in plants causes the degradation of hormone balance Increased concentrations of toxic hydrogen peroxide plant may introduce stress (Halliwell *et al*., 1982; Chaouia *et al*., 1997). Pb accumulates in the bodies of water organisms and soil organisms. In the studies, the existence of Pb, Cd, and Hg in high level shave significantly decreased the cytokine levels in bean seedlings (Halliwell *et al*., 1982; Chaouia *et al*., 1997; Zhang *et al*., 1999).Heavy metals affect adversely the stability of the cell turgor and cell wall. Also, due to reduced stomatal movement and the leaf area, plant water regime is also affected. Heavy metals are generally accumulated more in plant roots. Skin contact during walking or running people can be seen in heavy metal accumulated soil so that these metals reach the human body through the respiratory tract and ingestion of vegetables grown. Heavy metal, particularly some enzyme activities including amylase activity and reducing the embryos sugar transport and prevents germination as a result of increasing the protease activity.

Materials and Methods

Trace elements and heavy metals (Zn, Cu, Mn, Mg, Pb, Co, Cd, and Fe) have been performed by Atomic Absorption Spectrometer.

Results

Elements as Zn, Cu, Mn, Mg, Pb, Co, Cd, and Fe have been performed by Atomic Absorption Spectrometer. Pb, Fe, Cd and Co levels have been decreased in Bean Plant. Also, Zn, Mg, and Mn levels have been decreased in bean plants. Results are discussed as versatile.

Discussion

Biological elements which are essential components of biological structures may also be toxic when present at levels above the amounts required for biological function (Pirincci *et al.*, 2013). Mn is an essential element; also it is an important element necessary for many enzyme activities (Johnson, 2001). In living organisms, trace elements have been developed in order to use vital traceelements including Zn and Cu and to minimize toxic effects of heavy metals such as Cd, Hg and Pb also Cd

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increases oxidative DNA damage (Solioz *et al*., 1994;Gonullu *et al*., 2015). Some elements can affect the absorption of heavy metals in plants (Fu *et al*., 1996).Heavy metals cause environmental pollution. Some literature studies showed that exposure to heavy metals have severe toxic and carcinogenic effects on different humans and animals (Arslan *et al*., 2011).Heavy metal pollution is one of the environmental problems. Copper, in particular, lead to common industrial and agricultural serious problems (Fernandes & Henriques, 1991).Heavy metals can be become harmful by mixing some vegetables and fruits (Cobanoglu et al., 2010). In some studies, enzyme activity in plant tissue has been found that made of various heavy metals (Chaouia *et al*., 1997). In a study conducted in China it has been done numerous studies on the interaction of heavy metal and plants (Zhao & Bi 1999, Zhang and Huang 2000).Cd can be easily taken up by plants and phytotoxic (Page *et al*., 1981; Collins *et al*., 1981; Woolhouse, 1983). Heavy metals, which, they have a serious effect on plant growth (Zhang *et al*. 1999). In a study conducted in the literature, the relationship between Cd and Zn cytotoxicity and oxidative reactions of bean plants has examined. Elements such as Cd and Zn may affect the bean plants and some antioxidant enzymes can activate the bean plants (Chaouia *et al*., 1997).Elements such as Zn and Cd inhibits root plants in levels toxic, but enhances the capacity of some enzymes in the beans (Van Assche *et al*., 1988).Cd concentrations have found to cause toxic oxidative stress and lipid peroxidation also has been found to increase in all organs of the bean seedlings of the heavy metals (Chaouia et al., 1997).In the studies, the existence of Pb, Cd, and Hg in high levels have significantly decreased the cytokine levels in bean seedlings (Page *et al*., 1981).

Conclusion

Heavy metals on Bean Plant can be affected. As result, heavy metals can affect the etiology of plants and vegetables. In addition, heavy metals may create adverse effects on plants by affecting the plant's physiology and biochemistry.

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