Investigation of Effect of Heavy Metal of Vegetables Plant Growth. (Trigonella Foenum groecam)

Neel Yashoda Ramesh
Loknete Marutrao Ghule Patil Mahavidhyalay, Dahigaon Ne, Tal Shevgaon, Dist- Ahmednager

Abstract- "Waste materials are the major source of the soil pollution originates from mining, chemical, metal processing industries, heavy metal are insentric components of the environment with essential & non-essential both types. "Soil polluted with heavy metal are become common due to increase in geologic & androgenic activities. Heavy metal such as- ZnSo4, Cuso4, Mgso4, cr, Ni, Magnase, Iron, Mercury is major environmental pollutants. The heavy metal effect of vegetables and plant growth through soil pollution, air pollution, water pollution, air pollution, water pollution were briefly discussed in this articles.

Keywords-: Heavy metal, toxicity, effect of plant growth, vegetables, heavy metal pollution & soil pollution, accumulation health risk.

INTRODUCTION

Soil pollution by heavy metal is great concern to public health. The source of heavy metal in plant is environment in which the grow and their growth medium (soil) from which heavy metal are taken up by roots or foliage of plants. Heavy metal are toxic because they tend to bioaccumulation in heavy metal such as- lead (pb), cadmium (cd), arsenic (As) ect. have toxic effect on human health. Heavy metal contamination of vegetables cannot be underestimated as these food staff are important component of human diet. Vegetable is rich source of vitamins, mineral & fibres & also have antioxidatives effect heavy metal contamination of food items is one of the most important aspect of food quality assurance (Marshall 2004, Radwan & Salma, 2006, Khan et al 2008). Heavy metal accumulation in vegetables plant growth [Trigonella Foenum gracecum] vegetables constitute as an important part of the human diet since, they contain carbohydrates, protein as well as vitamins, minerals and trace elements. The objective of present work to focus on biomonitoring contamination of heavy metal different vegetables.

SCIENTIFIC CLASSIFICATION

Kingdom-: Plantae
Order-: Fabales
Genus-:. Trigonella
Species-:. Foenum gracecum.
Effect of heavy metal on vegetables plant growth-:

Nature of heavy metal-
Heavy metal are natural components cannot be degraded or destroyed biologically. The latter group comparing both essential and non-essential elements including toxic element.

Essential heavy metal-:
Some heavy metal is essential for plants and vegetables their availability in medium very and metal such as.

Effect of heavy metal-:
The heavy metal are available for plants Aptech are those present as soluble components in the soil solution these heavy metals are hazardous to vegetables *Trigonella Foenum gracecum*."heavy metal are effective to plant growth such as- Cu, Zn, Mg, Co, Ni,ect.

EFFECT OF HEAVY METAL

(1) Effect of Cuso4 (copper) -:
Copper is essential metal for normal plant growth and development vegetables. It is a potentially toxic copper(cu) considered as micronutrient for plants and important role in ATP synthesis.
(2) Effect of zinc (ZnSo4) on plant-:
Zinc is to help Produce chlorophyll zinc deficiency usually causes leaf discoloration called chlorosis tissue of vain to turn yellow zinc toxicity plants limited the growth of both roots and shoots.
(3) Effect of Cadmium in plants (Cd)-:
The permissible limit of cadmium in agricultural soil is 100 mg soil [70] plant grows in soil containing high level of Cd show visible symptoms of injury reflected in the term of chlorosis growth inhibition growing of root tips and finally death [72,73]. Cd has been shows with the Aptech transport and

MATERIAL AND METHOD

Material -:
Trigonella plant was produced from the local vegetables market. Good quality fresh leaves were picked manually and washed to remove the adhering to dehydration Trigonella Foenum plants heavy metal Cr, Zinc, Cuso4 ect.

Chemical analysis and quality control -:
Soil pH was measured in 1:2.5 of soil water suspension using a glass electrode. Soil organic matter (OM) content was determined by oxidation with potassium dichromate and colometric determination [33]. Cation exchange capacity (CEC) was a determined using the ammonium acetate metal after washing weight alcohol standard reference rises of this metal where 92%, 94%, 98% ,100%.

Statistical analysis -:
In this study, selected statistical method ANOVA, conserlation analysis and principle component analysis where use to determine the heavy metal accumulation and its controlling factors and to identify the origin of days meta in soil sample collected.

METHODS

Preparation of samples -:
The seeds of selected plants are sown in polythene bags container. When after the seeds are grown that treatment of heavy metal.
Mgso4, ZnSo4, Cuso4, cordium, lead. Plants in constant time intervals.

Preparation of chemicals -:
Five rate of Mgso4, ZnSo4, Cuso4, cordium, lead. (0.1N,0.2N,0.3N,0.4N,0.5N) prepared out and applied. When after seed grown at constant time interval after few days' morphological observation of plants i. e-: shoot length and roots length were recorded.

Observation Table: Accumulation of Znso4, Mgso4, Cuso4, Metal (Weight of mg/kg) in water methi by different concentration of heavy metal treatment. 5 Diff. Conce. Sol^{n} prepare - Znso4, Mgso4, Cuso4 (0.1N,0.2N,0.3N,0.4N,0.5N)

Plant Name		Treatment Znso4(mg/				Mgso4 (mg/kg)	
Trigonella Foenum qracecum	Control	Root length	Shoot	Root length	Shoot	Root length	Shoot
1	0.1N	2.3	2.8	2.3	2.8	2.7	3.5
2	0.2N	2.9	2.6	2.8	2.9	2.8	3.4
3	0.3N	3.4	3.12	3.4	3.5	3.4	3.5
4	0.4N	3.9	3.8	3.8	3.8	3.8	3.9
5	0.5N	3.10	3.9	3.9	3.9	4.2	4.3

CONCLUSION

From the result off present study is clear that evaluated level of metal accumulation in edible parts of visitable plants is mainly from there growth habit like water and soil in in around industrial area of Allahabad long term conception of these metal different disease like brain and kidney damage cancer in human body.

ACKNOWLEDGEMENT

The another would like to place in record their social tables social to UGC New Delhi.

RESULT AND DISCUSSION

Heavy metal concentration shoot variation among different vegetable. The variation in heavy metal concentration in vegetable of same site may be describe to difference in their morphology and physiology for update, exclusion, accumulation. Among leafy vegetable zinc (Zn)concentration was highest in Trigonella Foenum gracecum. The concentration of magnesium (Mg) was less in both plants.

RESULT AND DISCUSSION

- Heavy metal concentration showed variations among different vegetables.
- The variation in heavy metal concentration in vegetable of same site may be ascribed to the difference in their morphology and physiology for uptake, exclusion, accumulation.
- Among leafy vegetable Zn concentration was highest in Trigonella Foenum graecum.
- The concentration of Mg was less in both plant

REFERENCE

[1] Arif.I.B, Khan, H. A., Homaidan, A. A. A. and Ahamed, A. (2011). Determination of Cu, Mn, Hg, Pb, and Zn in outer tissue washings, outer tissues and inner tissues of different vegetables using ICP- OES. J. of Environ.stud. Vol. 20, No. 4, 853-841.

[2] Alam, M. G. M., Snow,E.T., and Tanaka, A. (2003). Arsenic and heavy metal concentration of vegetables grown in Samta Village, Bangladesh. The Science of the Total Environment, 111, 811-815.

[3] Arora, M., Kiran, B., Rani, A., Rani, S., Kaur, B., &Mittal,M.(2008). Heavy Metals Accumulation in vegetables irrigated with water from different sources. FoodChemistry, 111, 811815.doi: 10.1016/j.foodchem. 2008.04.0495.

[4] Bowen, H. J. M. (1966). Trace elements in biochemistry (p. 241). New York: Academic.

[5] Awashthi, S. K. (2000). Prevention of food Adulteration Act NO. 37 OF 1945. Central and State rules as amended for 1999 (3 ed.) New Delhi: Ashoka Low House.

[6] Gupta,S. Jena ,S. Davic,N. 2013. Assessment of heavy metal contain of green leafy vegitables. J. Food sci. 5(2).