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Research Highlight

METALLIC MERCURY: A DASTIC GROWTH INHIBITOR OF PLANTS

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Metallic mercury | non-biodegradable metal | irreversible injury | vascular bundles | growth inhibitors | germination | hypocotyls | Cymopsis tetragonoloba

Metallic mercury is considered as an extremely toxic, persistent, non essential as well as non-biodegradable metal that experience several changes during transfer through various trophic levels of the food chain[1].

Heavy metals can lead towards irreparable damage of important metabolic constituents and vital bio molecules. Moreover, they are also known to cause permanent injury to the plant cell membrane, particularly vascular bundles[2]. Mercury metal alters the physiology, development and growth of plant and it also involves in the production of Reactive Oxygen Species (ROS) which leads to subsequent cell death and eventually results in the poor quality of crops and reduces the yield drastically.

Metallic mercury also acts as growth inhibitors because they inhibit the growth and development of the plant. In their presence, the number of open stomata gets decreased and ultimately causes deficiency of oxygen in plants[3]. It is also reported that heavy metals produce anatomical modifications in primary leaves which induced changes in the shape of pallisade cells[4].

Heavy metals are a potential threat to plants which deteriorate the metabolic processes and also alleviate the growth parameters of plant[5,6]. It is also reported that cadmium and mercury bring out severe effects on elevated concentration and longer duration regarding seedling growth as well as metabolism[7].

This situation urged scientists to study the effect of mercury (Hg) on germination and histomorphology of the hypocotyls of *Cymopsis tetragonoloba* (guar or cluster bean). For this purpose, scientists collected the data after fifteen days and then compared with control[8].

During this experiment, mercury was found to inhibit the growth parameters of testing plant. Moreover, tissue structure of hypocotyls also got altered. It was also noticed that mercury decrease the area of stem as well as leaves. In addition, Transverse Section (TS) of treated hypocotyl with the amplified amount of Hg showed abridged cell size in comparison with control. Development of xylem also affected, straight T-shaped tissues were formed and phloem was of small patch in the cortical region.

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Conclusively, accumulation of mercury badly affects the structure of the cell and damages the root system because of which transportation of water from the roots to the tips of new leaves also gets decreased that ultimately leads towards drastic effect on germination, growth and development of the plant.

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