

Copper ions toxic effect on plants

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Introduction

- Copper(Cu) is important for vital biological processes.

However , increasing the amount of copper.....

Copper ions become a poison for plants.



Question

How much copper ions poisonous to plants?

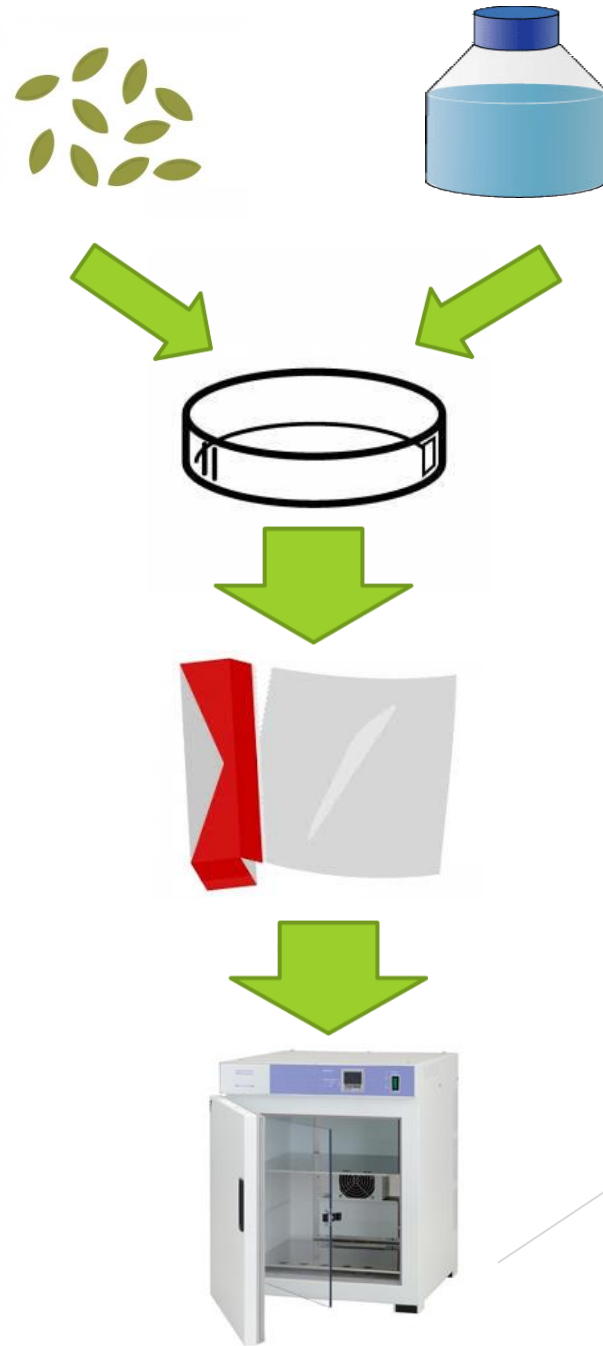
Experiment

<Materials>

- Copper sulfate aqueous solution
- (Concentration 1.0%, $1.0 \times 10^{-1}\%$, $1.0 \times 10^{-2}\%$, $1.0 \times 10^{-3}\%$, $1.0 \times 10^{-4}\%$, $1.0 \times 10^{-5}\%$, $1.0 \times 10^{-6}\%$)
- Water
- Radish seed

<Method>

- ① Put radish seeds and Copper sulfate aqueous solution in a petri dish.
- ② Wrap the petri dish with aluminum foil.
- ③ set the petri dish on incubator.

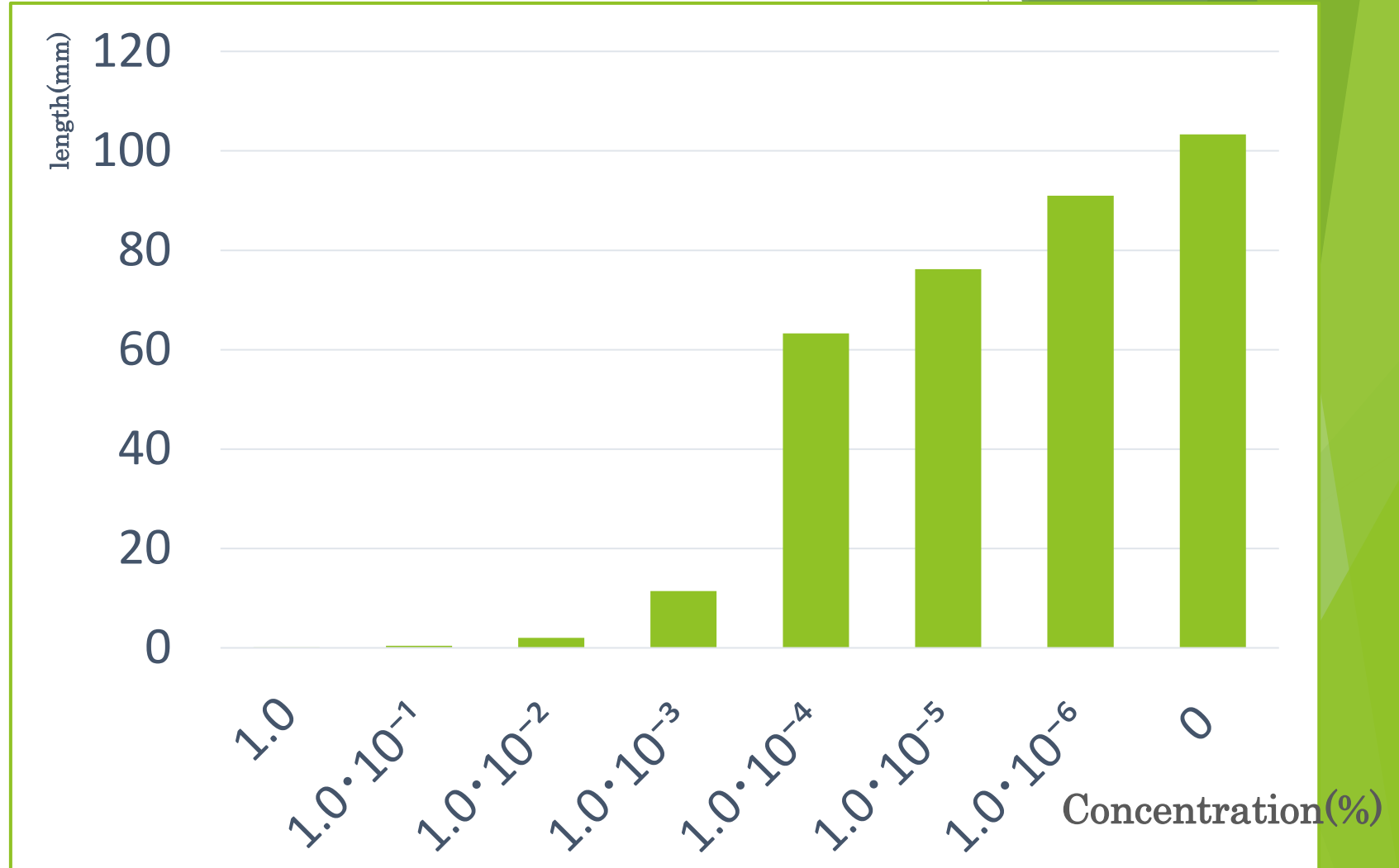


Result & Conclusion

- There is difference between $1.0 \times 10^{-30}\%$ and $1.0 \times 10^{-40}\%$.



- A copper ions concentration of more than $1.0 \times 10^{-30}\%$ causes toxicity for plant.



Result & Conclusion

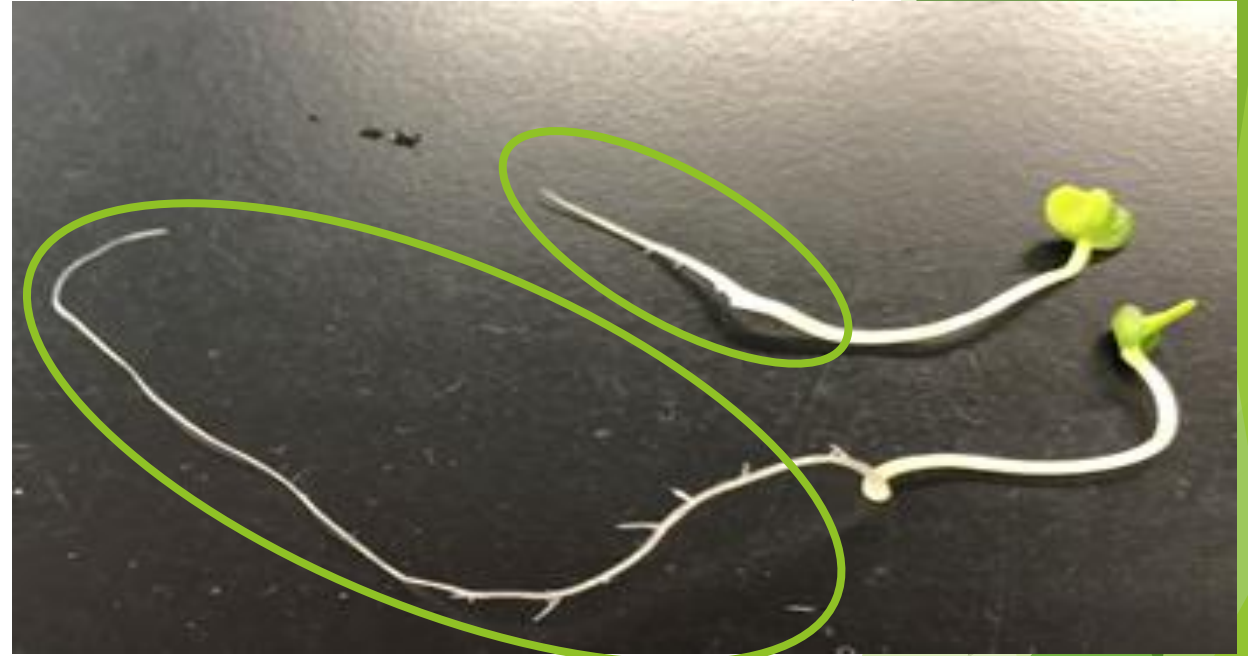
- The length of hypocotyl is almost the same.

- The length of root is different.



- Copper ions affects the root.

$1.0 \times 10^{-30}\%$ ↓



↑water