

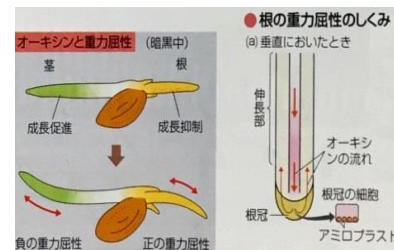
How centrifugal force effects plants

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The Purpose

Gravity affects plants which live on the earth and changes the stream of plant's hormone. The hormone is called "auxin". At that time,"amyloplast " falls down. Because of this phenomenon, roots grow towards the earth and stalks grow towards the sky. This method is called "Gravity Tropism".

Then, we pay attention to this method and tried an experiment to test how the radish grows when we apply a centrifugal force.



Method

- Turning speed is 8.24 times /min
- A fluorescent lamp is used.
- Arrange containers so there is equal space from center of potter's wheel
- Plant seeds and start turning the potter's wheel
- Unify 40g of soil in each containers



Consideration

The pictures show that the farther the cup is from the center, the more severe the stem bends inward. The pictures don't show that the roots bend out, but we knew. Also we understand there is a little difference, but the stronger the centrifugal force is, the bigger the stem bends. The vegetable's growth in this experiment shows that the centrifugal force changes the stream of auxin. According to this, we also found that plants showed gravitropism.

Result



The farther the cup was away from the center, the more the radish bent.



•We used the formula below in order to display centrifugal force which affects each of the plants.

$$F = m(\text{kg}) \times \omega^2 \times r(\text{m})$$

※F:centrifugal force

m:mass r:distance from the center

The right graph shows the relationship between the centrifugal force and bent degree.

