

The Antibacterial Activity of *Penicillium Notatum*

Background

Penicillium has antibacterial activity. This activity has an effect on gram-positive bacteria.

Purpose

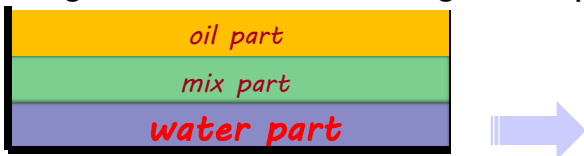
To investigate the antibacterial activity of *Penicillium* by using *Bacillus subtilis natto*

Materials

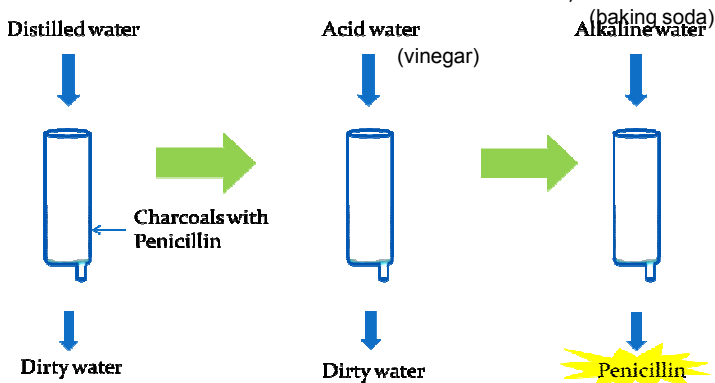
Penicillium, liquid medium, oil, vinegar, baking soda, distilled water, filter, unlit charcoals, syringe

Experiment 1

Gathering *Penicillium* from rice, oranges, breads, etc.
Growing them on liquid medium with potatoes and water after washing rice.
Filtering these medium.
Mixing with oil and removing water part.



Putting the water part on unlit charcoals.
Adding distilled water, acid water, alkaline water, in turn.



→ We got the substance which seemed to be *Penicillin*.

Experience 2

Putting a pack of natto in the water and boiling it.
Watering its upper part down to $1/10^5 \sim 1/10^8$.
Setting each liquid on petri dishes.
→ *Bacillus subtilis natto* grew a lot.

Experience 3

Putting our *Penicillin* and *Bacillus subtilis natto* together on the same petri dish.
→ Our *Penicillin* couldn't prevent the growth of *Bacillus subtilis natto*.

Conclusion

We thought the reason for this result might be:

- *Bacillus subtilis natto* was too strong.
- *Penicillin* quantity was not enough.
- We used different kinds of *Penicillium* which have no antibacterial activity against *Bacillus subtilis natto*.

Future Research

Using commercially available *Penicillin* which has stronger antibacterial activity.
Using weaker gram-positive bacteria.

