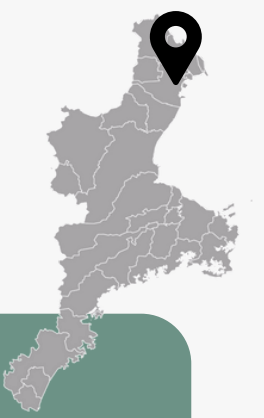




"Hidden Functions" of Familiar Products

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Background

We thought that finding new functions beyond the original purposes might be useful for our daily lives and the environment. Therefore, we carried out **two** scientific experiments to see **if familiar daily goods and foods have effects other than their original uses**.



Cough drops

1.Motivation

When I caught a cold, I took a cough drop, and my throat felt a little better. That made me curious, and I decided to look into **whether cough drops have antibacterial effects**.

2.Experiment

Method

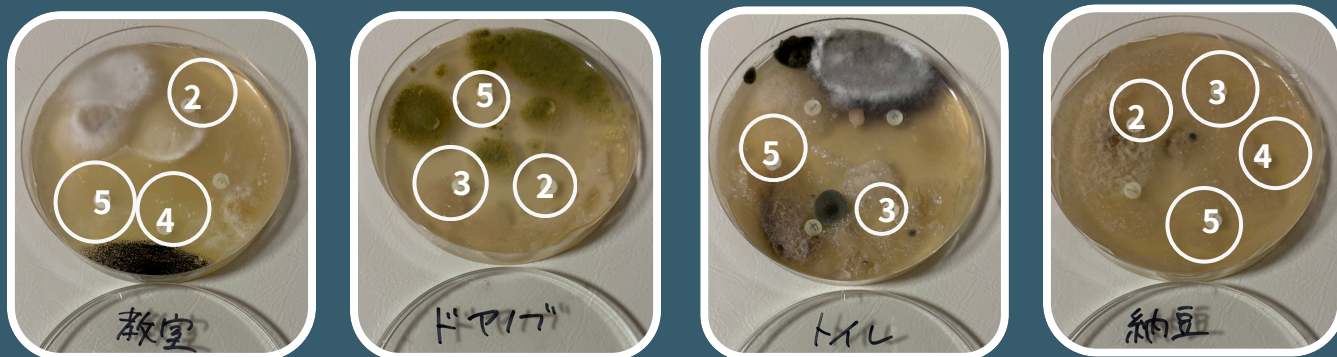
- (1) Prepare agar plates.
- (2) Use cotton swabs to collect bacteria from the **classroom**, **doorknob**, **toilet**, and **natto**, then spread them onto the agar plates.
- (3) Dissolve **four types of candies** in water, soak filter papers in the solutions, and place them on the agar plates.



- (5) Leave them for a week.

Result

※These are the clearer photo of the two agar plates for each bacteria.



classroom	doorknob	toilet	natto
② ④ ⑤	② ③ ⑤	③ ⑤	② ③ ④ ⑤

▲ the numbers are that don't have any bacteria around them

Discussion

No.1(4)⑤
No.2(3)②,③
No.3(2)④

Isodine is the most effective against bacteria, followed by **Vicks(Orange)** and **Throat Troche**.

Cough drops may have antibacterial properties!

3.Summary

Cough drops help **protect throat health** and prevent mild infections ,especially in places without access to **medical supplies**.



Chemical Hand Warmer

1.Motivation

About 1.8billion warmers were sold in 2024 —around 0.73 million tons in total. Knowing this, I wanted to find ways to reuse used and cooled warmers.

2.Deodorizing Effect

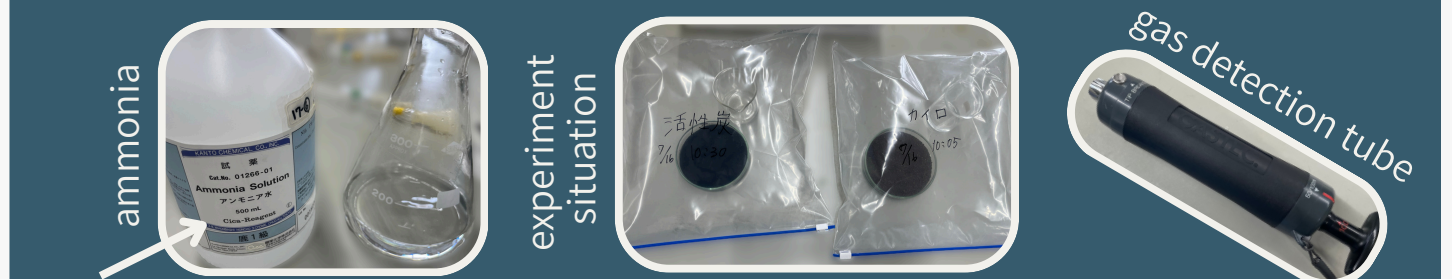
The activated charcoal in warmers can remove bad odors.

▷▷ **if used warmers could still have a deodorizing effect.**

3.Experiment

Method

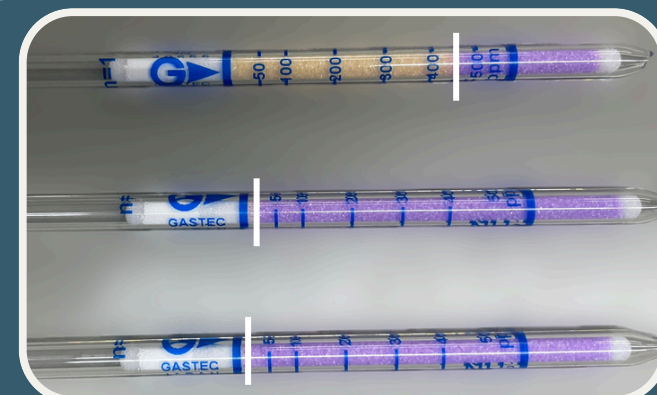
- (1) Diluted **ammonia water** measured into a beaker.
- (2) A **sealable bag** with inflated with air, and sample (1) placed inside.
- (3) The ammonia concentration was measured with a **gas detection tube**.
- (4) **Chemical warmer** and **activated charcoal** in were placed inside.



The first type

Result

$\text{NH}_3:\text{H}_2\text{O}$
=1:100
→10ml
gas tubes:
3M,
10-1000ppm



① before
48 hours

② after/charcoal
—8g, in petri dish
③ after/warmer
—50g, in petri dish

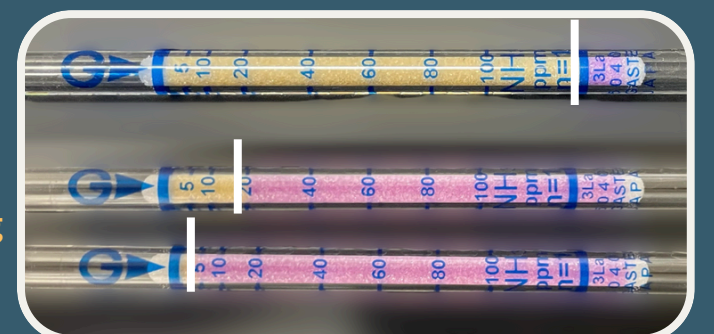
the yellow color shows the concentration of ammonia.

The second type

④ before
24 hours

$\text{NH}_3:\text{H}_2\text{O}$
=0.5:300
→10ml
gas tubes:
3L,
0.5-78ppm

⑤ after/warmer
—50g, in original bag
⑥ after/warmer
—50g, in petri dish



Discussion

- warmers can remove ammonia as well as charcoal.
- warmers work better when spread in a Petri dish, but still have a good effect even in original bags.

4.Summary

Ammonia is found in toilet and pet odors. We can **put warmers in places where bad smells are a problem to help reduce the odor**. This idea could be easily practiced in homes or school restrooms.



Conclusion

It was found that **cough drops** ,which are foods to relieve coughs and sore throats, can have antibacterial effects, and that **chemical hand warmers**, which are products used to keep warm, can have deodorizing effects.

Cough drops can be used as preventive or antibacterial food, and used hand warmers could be recycled as deodorants.

Future Work

By utilizing products with established safety, we can develop **low-cost and accessible** methods. These approaches are especially useful in **developing countries and during disasters**. Furthermore, such discoveries contribute to **reducing waste and creating a more sustainable society**.We propose a new research perspective called "the study of hidden functions."