

An Investigation of Sterilization and Moisturization of the skin by Alcohol

Introduction

By alcohol sterilization...

○ Advantage: We can sterilize our hands.



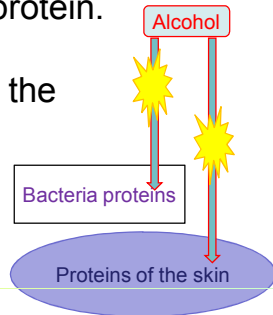
● Disadvantage: The skin of our hands becomes rough.

Alcohol Facts

Alcohol kills bacteria by changing the structure of their protein.

↓
Alcohol also changes the protein structure of the human skin.

↓
Alcohol makes the skin rough.



Purpose

- ① To prove that alcohol can sterilize something that has bacteria
- ② To find a way to soften the alcohol's power to change the structure of protein

Main purpose is to prevent the skin from becoming rough because of alcohol.

Materials and Instruments for Experiments

- Three kinds of alcohol
Ethanol (Ethyl alcohol), Ethylene glycol, and Glycerin
(with 25%, 50%, 75%, 100% Concentration)
- Distilled water
- Draft
- Micropipette
- Nutrient mediums that increase bacteria
- Urea ← This is good for moisturizing
- Petri dishes

Experiment

- ① After increasing the bacteria on the petri dishes, I added a drop of each kind of alcohol and urea on the dishes.
- ② I measured the sizes of the circles in the petri dishes where bacteria was killed.
- ③ I measured the weight of each dish.
→ I could find which kind of alcohol can sterilize and moisture well by ② and ③.

Result

The ranking of the 5 best liquids for sterilizing the skin

1. Solution made with Ethanol and Urea
2. Glycerin 50% Concentration
3. Ethanol 100% "
4. Ethylene glycol 75% "
5. Ethanol 25% "

The ranking of 5 best liquids for moisturizing the skin

1. Ethylene glycol 100% Concentration
2. Ethylene glycol 25% "
3. Distilled water "
4. Glycerin 25% "
5. Solution made with Ethanol and Urea

Considerations and Challenges

Judging from the results, there are...

- Kinds of alcohol which are good for **either** sterilizing or moisturizing.
- Kinds of alcohol which are good for **both** sterilizing and moisturizing. →
I can use each solution without mixing them.

Further study will focus on...

- Getting more data.
- Figuring out which kinds of alcohol are good for moisturizing or sterilizing.
- Making a solution by mixing different kinds of alcohol.
→ Finding a way to sterilize the skin without making it rough.