

A cartoon illustration of a scientist with blonde hair, wearing a white lab coat, blue pants, and safety goggles. The scientist is holding two test tubes: one with orange liquid and one with green liquid. The entire scene is set against a purple, cloud-like background.

TITLE OF PROJECT

Converting vegetable oil into soap.

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PURPOSE & HYPOTHESIS

Purpose: To determine which common household cooking oils (olive oil, coconut oil, avocado oil, canola oil) make the most suds when converted to soap.

Hypothesis: I think that **coconut oil** will make most suds out of all because according to my research it says that coconut oil will make more bubbles.

RESEARCH

Research: I researched how vegetable oil can be made into soap and this is what I learned. Each soap when mixed with water makes a lather and bubbles. Bubbles are pockets of soap and water that are filled with air. When soap and water are mixed together and air is blown into the mixture, the soap forms a thin skin or wall and traps the air, creating a bubble.

MATERIALS

- Olive Oil
- Avocado Oil
- Canola Oil
- Coconut Oil
- Lye
- Distilled Water
- Plastic Bowl
- Stainless Steel Bowl
- Spoon
- Stick Blender
- Digital Scale
- Soap Moulds
- Mask
- Gloves
- Safety Glasses

EXPERIMENT

My experiment was to see how much suds each of the 4 soaps can make. First, I need to make each soap. To make each soap, I need to mix:

- 16 fluid oz. oil
- 4.85 fluid oz. distilled water
- 2.05oz. 100% pure lye

First, I added the lye to the distilled water. NEVER add water to lye, because it will eruption. And always wear gloves, mask and goggles, because lye can burn your skin and makes fumes when mixed with water. The lye water mixture will get hot, up to 200°F. Next, I waited until the temperature dropped just below 100°F. Then I added the lye water to the oil while stirring. When the solution thickened, I used a stick blender for 2 minutes. And then I poured the mixture into a mould. I repeated the same process for each oil and let them harden for 48 hours.

To test how much suds each soap made, I added 0.05oz of soap to 8 fluid oz of distilled water and mixed in a blender for 10 seconds. I repeated the same process for each soap. And observed the amount of suds each soap created.

As a bonus test, I tested which soap cleans the best. To test, I used to 0.05oz of soap and 8 fluid oz of distilled water to clean a 1 tsp coffee stain. I hand scrubbed the stain for 30 seconds and rinsed the cloth. I repeated this process with each soap and compared the results.

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ANALYSIS

After comparing the results of the 4 suds tests, I found the following results from most suds to least.

1st place - olive oil soap

2nd place - canola oil soap

3rd place - avocado oil soap

4th place - coconut oil soap

After comparing the results of the bonus test, I found the following results from cleanest to dirtiest.

1st place - olive oil soap

2nd place - canola oil soap

3rd place - avocado oil soap

4th place - coconut oil soap

CONCLUSION

In conclusion my hypothesis was wrong, the coconut oil came in last place I thought that it would create the most suds, but it created the least out of all.

And the bonus test had the same results as the suds test. This means the more suds the soap makes, the better it cleans.

REAL WORLD CONNECTION

One real world connection is that it is very easy to make your own soaps from common oils people have in their homes.

Another thing I learned is that soaps that make more suds clean better. Some people may buy cheaper soaps that don't make as much suds and end up using more soap to clean things. So, a more expensive soap that makes more suds can save you money because you use less.

WORKS CITED

YouTube Channel: Hippie Medium - How To Make 100% Coconut Oil Soap

Youtube Channel: Hillside Homestead & Holistic - DIY Canola Oil Soap

YouTube Channel: Holly's Soapmaking - Kapia Mera

<https://lovelygreens.com/simple-castile-soap-recipe-make-olive-oil-soap/>

<https://feltmagnet.com/crafts/Easy-Homemade-Coconut-Oil-Soap>