

# Sanko Zome ; Creation of New Original Color

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## 1. Background

- <1>Tannin
- Tannin is contained coffee or walnut skin.
  - Tannin is one of polyphenol.
  - We can dye using tannin dyeing.

→ Dying clothes using coffee

- <2>Polyphenol    Polyphenol + Alkaline or Acidic material

→ Changes color

**Purpose :** Control cloth color by pH

## 2. Material and methods

### Experiment 1 Decide the type of cloth (Ex1)

Material

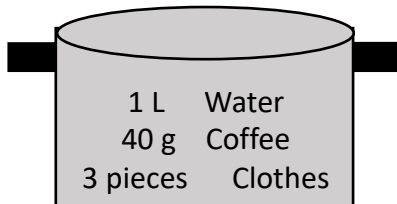


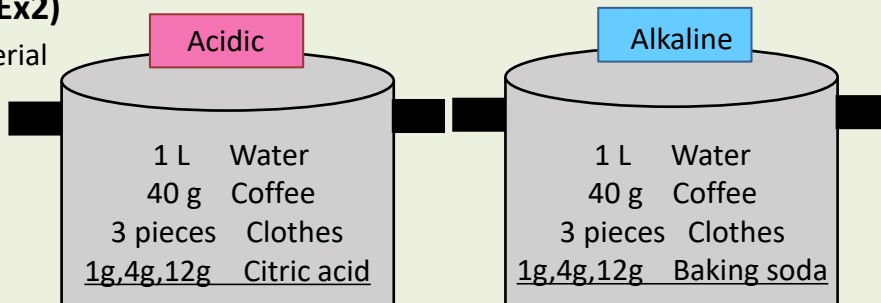
Figure1 Dyeing process

※Cotton or Hemp don't have protein which need for this experiment. So, we put there in the soy milk for 3days.

- Methods<sup>2</sup>
1. Put water and coffee in the pot and boiled them.
  2. After boiling, we added the clothes and wait 30 minutes.

### Experiment 2 Effect of acidic and alkaline material to the clothes (Ex2)

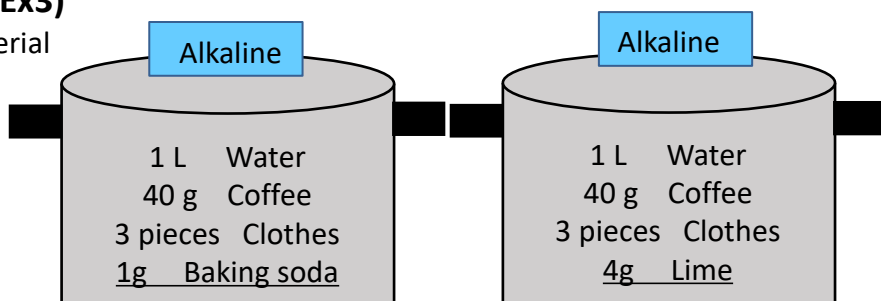
Material



Methods Same as experiment A

### Experiment 3 Same pH value but different material (Ex3)

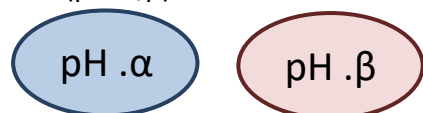
Material



Methods Same as experiment A

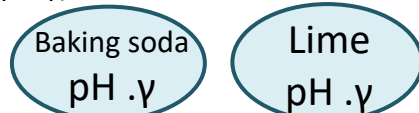
## 4. Conclusion

EX2 same materials different pH (pH.α,β)



**Different colors**

EX3 different materials same pH (pH.γ)



**Same colors**

Cloth colors can be changed by pH

## 3. Result and discussion

### Experiment 1 Decide the type of cloth

Figure2 Comparison of the result of clothes

Dyeing	Wool	Silk	Hemp	Cotton
before				
after				

1. The wool, silk, cotton, hemp all can be dyed.
2. The order is wool, silk, cotton, hemp.

We use cotton because it can be dyed and it is cheaper.

### Experiment 2 Effect of acidic and alkaline material to the clothes

Figure3 Result of color change by difference between acidic and basic condition

quantity	12g	4g	1g	basic	1g	4g	12g
pH	2	3	4		7	7.5	8
Material	Citric acid				Baking soda		

← Acidic → Alkaline →

Colors changed by difference of pH.

Colors also changed by polyphenol.

### Experiment 3 Same pH value but different material

Figure4 Change of color corresponds pH

	Baking soda	Lime
pH	7	7
First		
Second		

Clothes don't change color.

Don't change color by materials.

## 5. Future work

- To research the regularity of changing colors.
- To use walnuts of Sanko in the future experiment for dyeing.
- To use rusty iron nail to keep the colors.
- To change the length of dyeing time

## References

- (1) tannin <http://www.k-imagawa.co.jp/wp/wp-content/uploads/2017/05/1e95d7c9286526ea34bd9a1f873cf389.pdf>  
 (2) process of dyeing <https://terappo.com/110>