

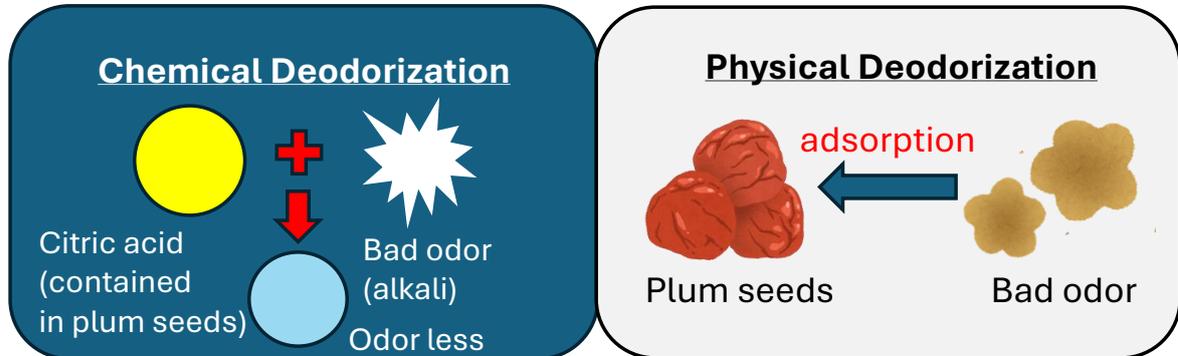
# An Experiment on the Deodorizing Effect of Plum Seeds

## Introduction

Wakayama Prefectural Hidaka High School

1,600 tons of plum seeds are generated annually as industrial waste in Wakayama.

## Information



### Experiment 1: The Differences in Deodorizing Effects by The Heating Temperature

1. Prepare plum seeds that have not been heated, along with seeds heated over a blue flame ( approx. 1500°C ) and a red flame. ( approx. 800~1000°C )
2. Crush the seeds. ( Figure 1 )
3. Add two plum seeds to 100 ml of 0.14% ammonia solution and mix.
4. Add two drops of phenolphthalein solution to the aqueous solution of 3. and filter, observing the color change. ( Figure 2 )

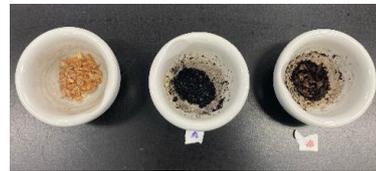


Figure 1: No heating, blue flame, red flame



Figure 2: Control, no heating, blue flame, red flame

### Experiment 2: Cat Litter made from Plum Seeds

1. Prepare the litter in 8g, 16g, and 40g sizes.
2. Add these litter to 100ml of 0.14% ammonia solution and mix.
3. Add two drops of phenolphthalein solution to the aqueous solution of 2. and filter, observing the color change. (Figure 3)



Figure 3: Filtered Solution (8g, 16g, 40g)

## Analysis

In Experiment 1:

Plum seeds heated in a flame of **approx. 800~1000°C** has the strongest deodorizing effects.

- Not heated area → Chemical deodorization by citric acid
- Heated area → Physical deodorization by the porous structure

## Future Outlook

- Consider the method to accurately measure the temperature of the flame.
- Increase the amount of plum seeds.

## References

梅干しの種を100%アップサイクル！/SmartFLASH

<https://smart-flash.jp/lifemoney/371167/>

炎の色と温度の関係を徹底解説 青い炎はなぜ熱いのか？ | 色の調合室

<https://imotas.net/flame-color-temperature-chart/>

ペット用品 | 株式会社センターバレイ | 猫砂、脱臭梅

<https://www.center-valley.com/>