

Change in the Texture of Starch Cakes

Introduction

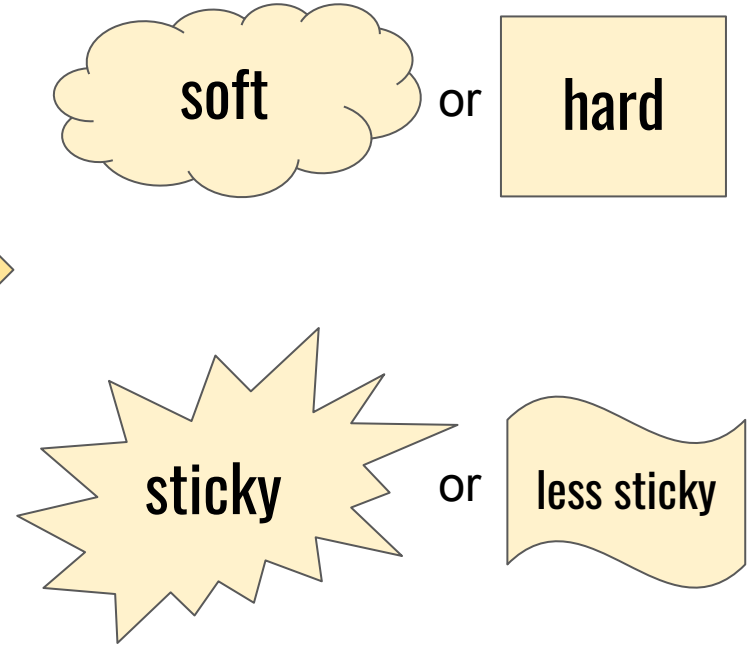
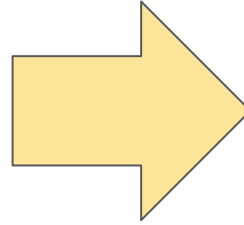
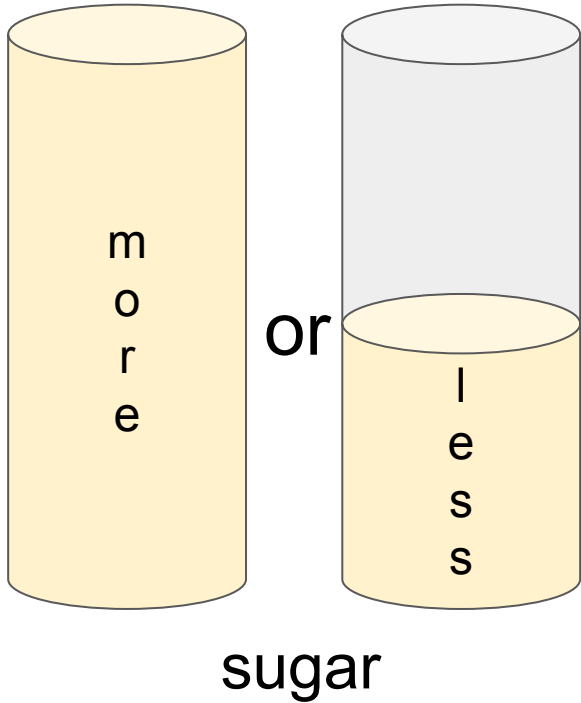
This experiment was initiated to determine the properties of starch.

Background

Warabi mochi is a traditional Japanese food culture



Research Question



situation of starch cake

process to hypothesis

Sugar has the property of holding water.



Sugar holds more water in the starch cake

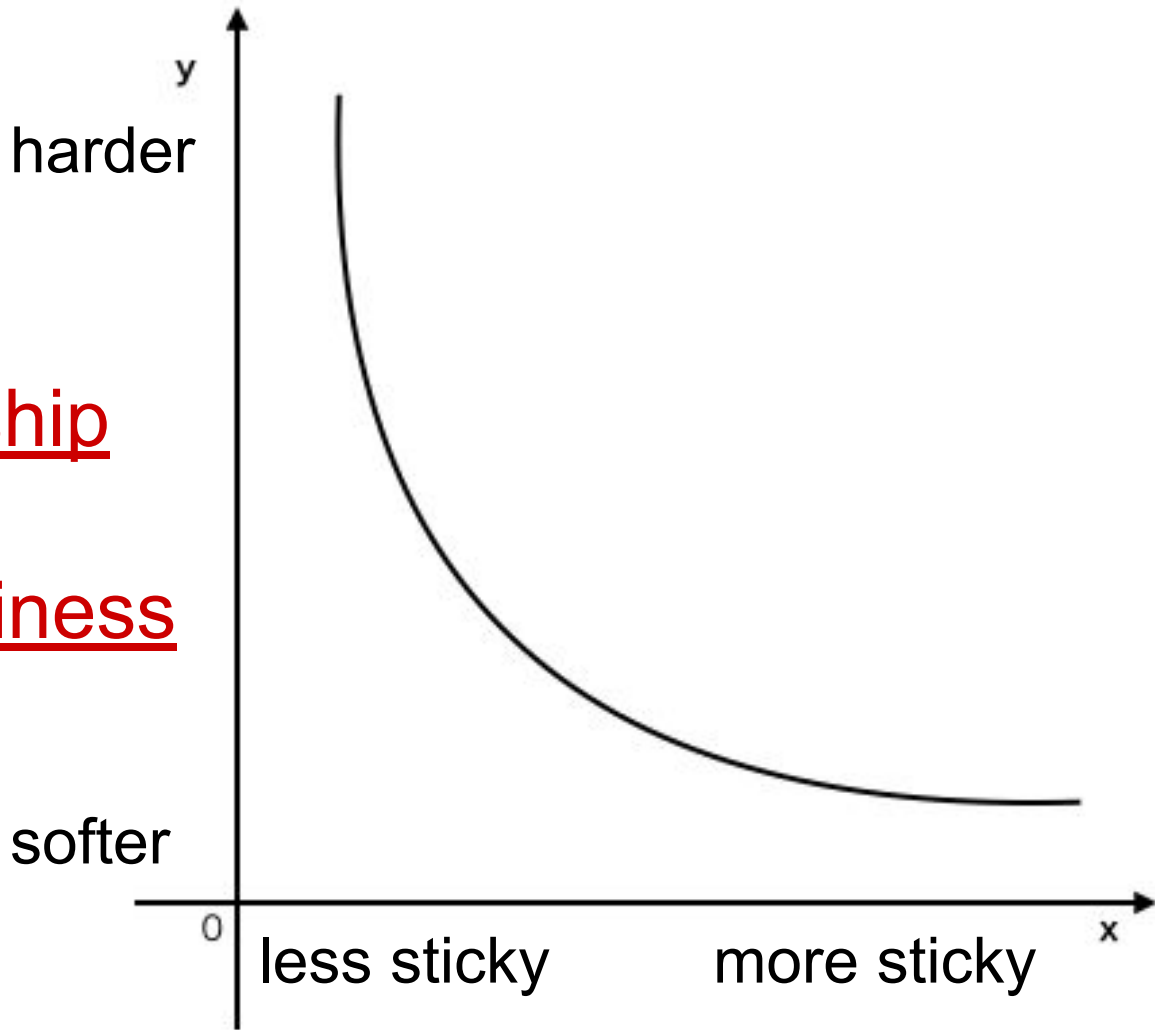


↓ water makes it softer and more sticky

hypothesis

The starch cakes with more sugar will become softer and more sticky!

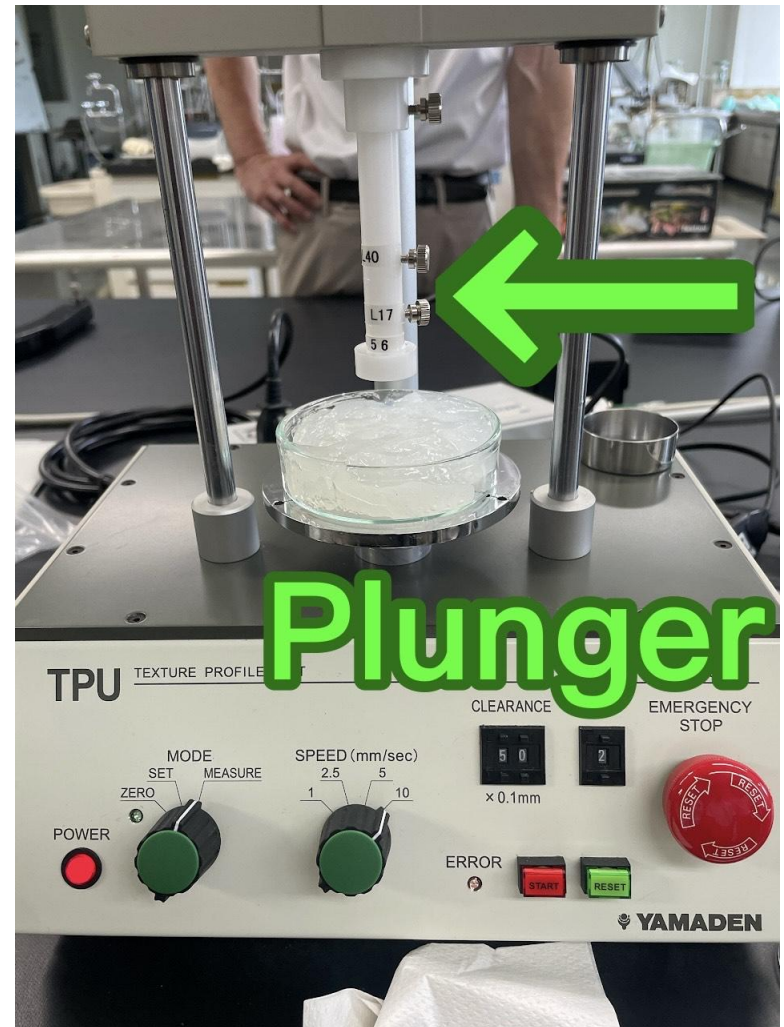
Inverse Relationship
between
Softness and stickiness

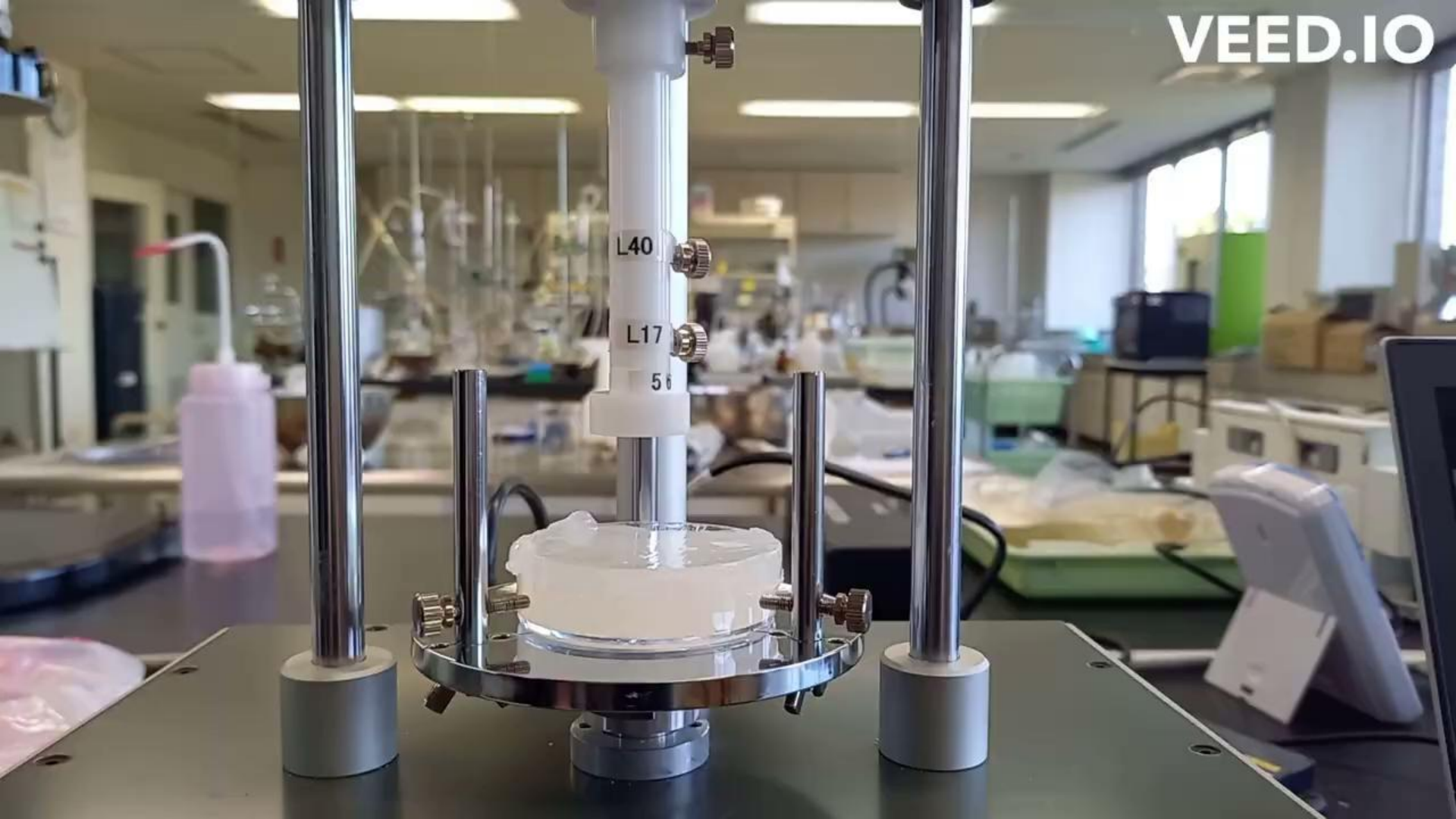


Method

Tool

- Physical Properties Tester
- Petri Dish





The Percentage of Ingredients

	①	②	③
suger	20g	110g	200g
water	200g	200g	200g
starch	50g	50g	50g

Definitions of softness and stickless

Softness ···

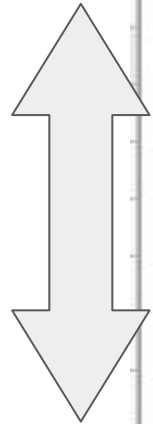
Maximum value of force pushing starch cake
[N] [kg·m/s²]

Stickiness ···

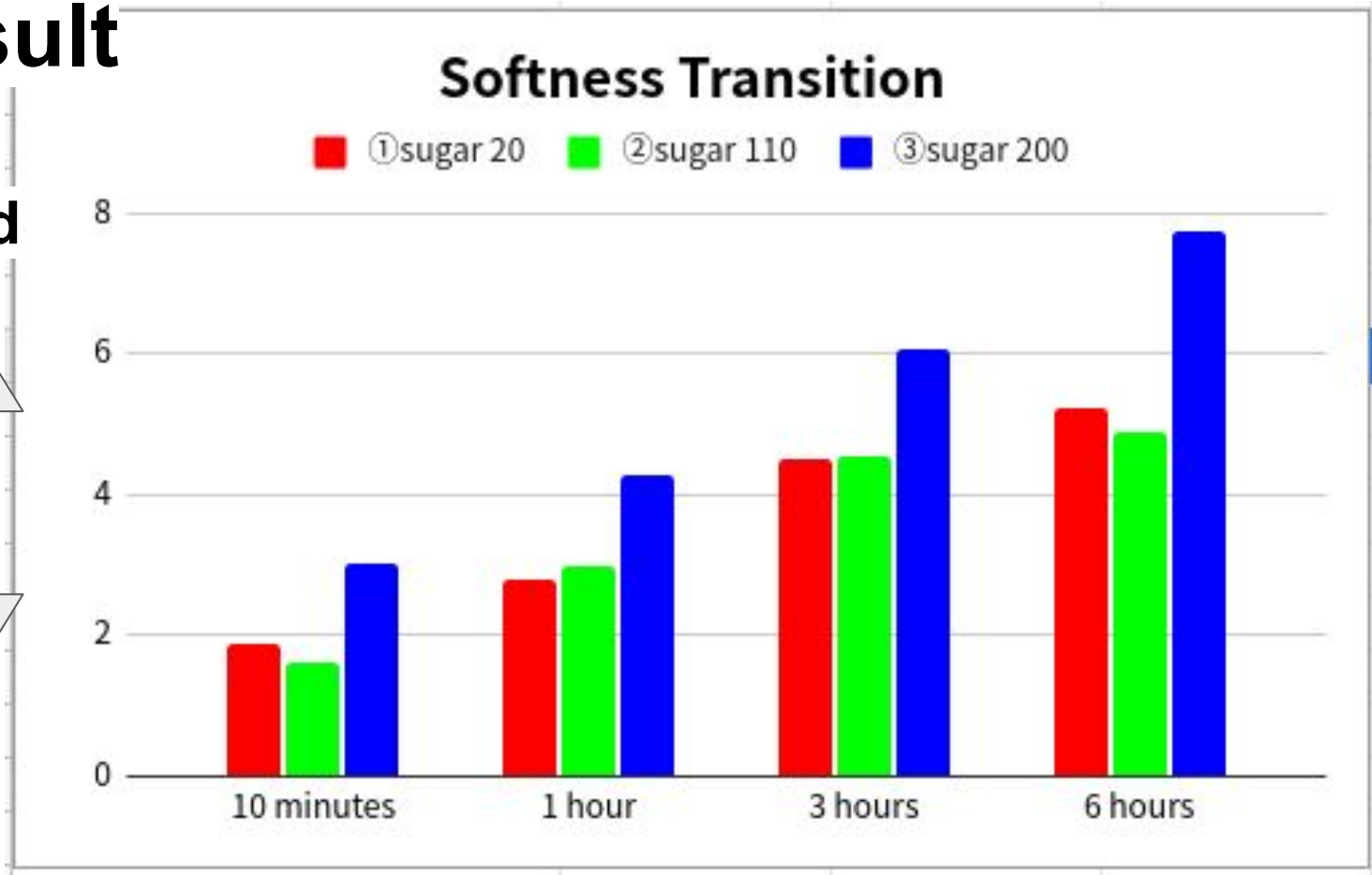
**The value of work pulling plunger
trying to go back**
[J] [kg·(m/s)²]

Result

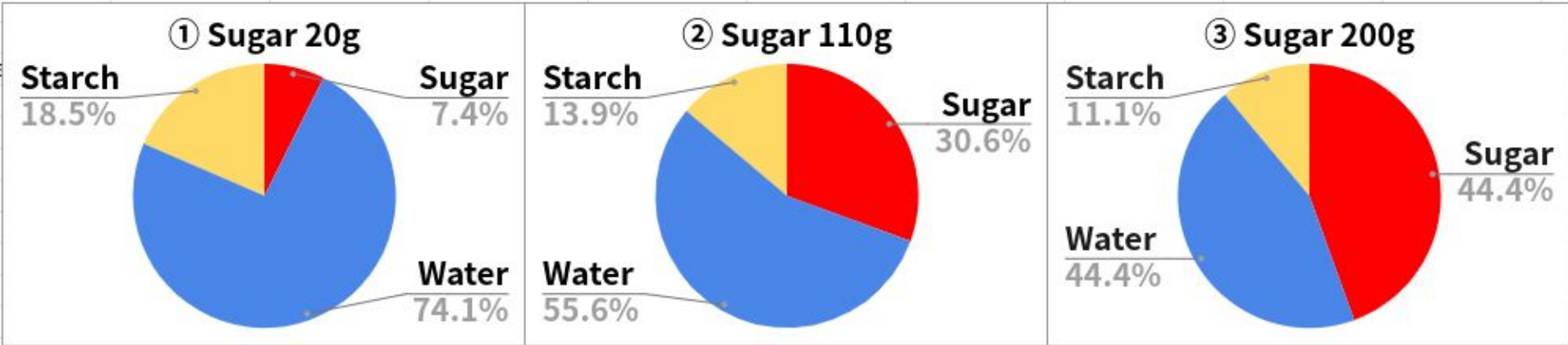
Hard



Soft



Discussion 1



Why did a starch cake with less sugar become softer?

Lower percentage of **sugar** + **Higher** percentage of **water**

➡ No.1 starch cake becomes **softer**

Discussion 2

Why was the softness of No.1 almost the same as the softness of No.2?

➔ Sugar's property of holding water **stop water escaping out** of starch cake.

➔ **Sugar is helpful** to make starch cake softer

Next Step

- To make discussion about stickiness
- To measure change based on the percentage of water or starch