POTATO OSMOSIS LAB

NAME

CLASS / DATE

01 QUESTION

How does salt concentration relate to potato-strip mass change after a 24-hour soak?

02 PREDICT BEFORE YOU MEASURE

WHICH SOLUTION MAY MAKE A POTATO STRIP GAIN THE MOST MASS?

○ 0% salt ○ 5% salt ○ 10% salt ○ not sure yet

Predict before soaking. Compare equal-sized strips from the same potato and use the same soak time.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: SALT CONCENTRATION (0%, 5%, 10%). MEASURED: MASS CHANGE AND PERCENT CHANGE. KEEP POTATO SOURCE, STRIP DIMENSIONS, SOLUTION VOLUME, TEMPERATURE AND SOAK TIME CONSTANT.

04 MATERIALS

☐ Nine matched potato strips and ruler

☐ Nine labeled cups: three replicates each at 0%, 5% and 10% salt

☐ 100 mL final solution at each concentration, divided to about 30 mL per cup

☐ Balance to 0.1 g

☐ 100 mL graduated cylinder, paper towels, tray and recording sheet

05 PROCEDURE

SAFETY An adult cuts potato strips on a stable cutting board, keeping the blade away from hands; alternatively, provide pre-cut strips or a safe cutter under direct supervision. Do not eat the potato strips or solutions. Wash hands after handling samples and clean the balance area.

1 **SET A FAIR TEST** With adult-cut or pre-cut strips, prepare 100 mL final volume at 0%, 5% and 10% salt by weight per volume. Divide each solution among three labeled cups (about 30 mL per cup); use the same potato source and strip dimensions. ☐

2 **RECORD STARTING VALUES** Blot nine matched strips consistently. Measure each starting mass to 0.1 g and length; label each 0%, 5% or 10%, replicate 1, 2 or 3. ☐

3 **SOAK FOR 24 HOURS** Place one strip in each of nine separate cups, cover them and leave at room temperature for 24 hours. The soak is elapsed time, not class time. ☐

4 **MEASURE RESULTS** Remove and gently blot each strip the same way. Record all nine final masses to 0.1 g, lengths and textures. Do not eat samples; wash hands. ☐

5 **CALCULATE AND COMPARE** For every strip, find mass change = final − starting mass and percentage change = mass change ÷ starting mass × 100%. Compare each condition's three values, mean and range. ☐

DATA AND EXPLANATION

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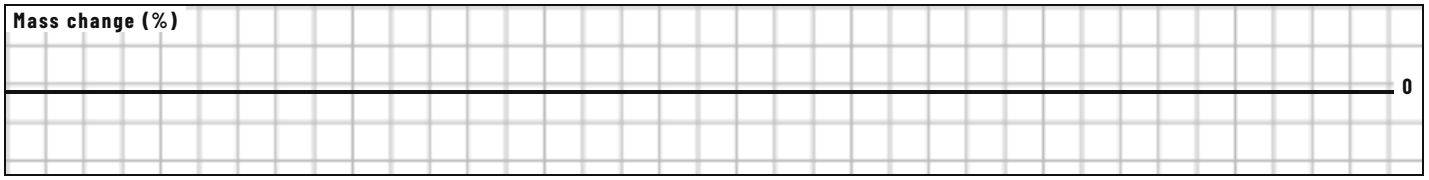
06 RECORD YOUR OBSERVATIONS

SALT SOLUTION	START MASS (G)	AFTER 24 H (G)	CHANGE (G)	CHANGE (%)
0% · replicate 1				
0% · replicate 2				
0% · replicate 3				
5% · replicate 1				
5% · replicate 2				
5% · replicate 3				
10% · replicate 1				
10% · replicate 2				
10% · replicate 3				

Mass change = final mass − starting mass. Percentage change = (mass change ÷ starting mass) × 100%. Keep the sign to show gain or loss.

SHOW ONE CALCULATION

07 POTATO MASS CHANGE BY SALT CONCENTRATION



Plot each replicate's percentage change at its concentration. Center 0 and show values above and below it.

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: salt concentration · starting mass · final mass · percentage change · osmosis · cell membrane

09 THINK FURTHER

Which concentration has the widest replicate range? What might explain it?