

Lab Report Template

Aim: To investigate which vegetable contains the most liquid.

Introduction (*Introduce your topic here. Discuss why the topic is of interest to you, some background information about it (use proper referencing), and useful formulas that may apply*):

We will be investigating which vegetable contains the most liquid by drying vegetables using a drying oven. We chose this topic because we wanted different topics but the idea of vegetables perfectly combined each of our ideals. Adding on, we wanted to do something interesting with vegetables, so we thought that drying vegetables might be interesting and doable with the time we were given. According to healthyfamilyproject.com, the water in vegetables is important because it “helps keep the calorie level of fruits and vegetables low while their nutrient level remains high”. We will be using tomato, cucumber, potato, celery, cauliflower, bell pepper, eggplant and zucchini. We chose these vegetables because we wanted to have a variety of types, with tomatoes and cucumbers obviously containing the most amounts of water, while potatoes and cauliflower seemed to be the driest and containing less amount of water.

Hypothesis: (*Provide an educated guess for the experiment and give reasons in your answer.*)

We believe that tomatoes will have the most liquid because when something that contains liquid gets dried, usually it changes into a smaller form. When tomatoes are dried, their form shrinks into a crumpled figure, which can be seen in the image below. On the contrary we thought that a potato would have the least amount of water because it is the most solid out of the vegetables we have chosen, and also because it is harder to break.



Image: <https://tomiz.com/item/01027801>

Variables:

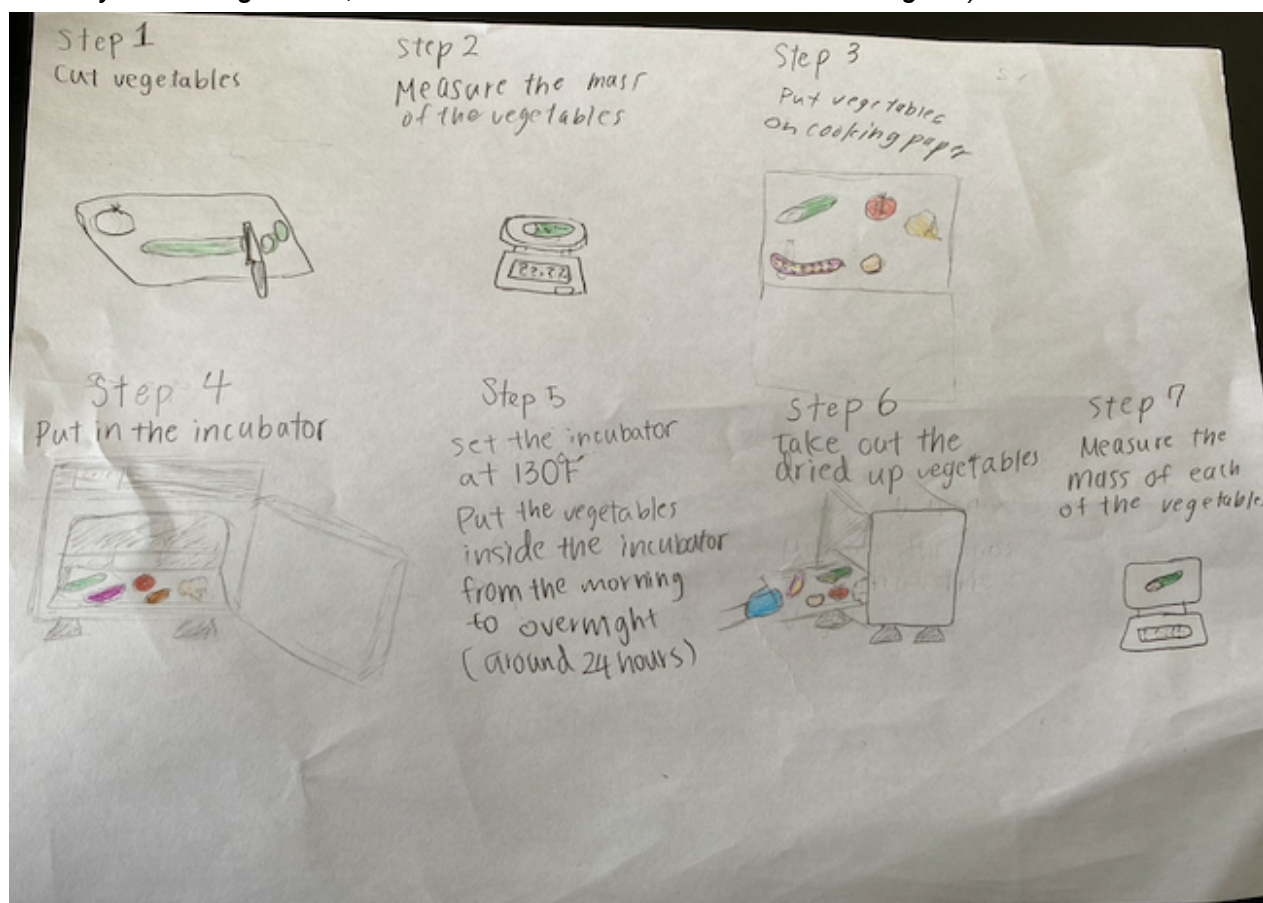
Type of Variable	Variable (include units, if applicable)	Fair Testing
Independent Variable	The type of vegetable	To compare which vegetable contains the most liquid
Dependent Variable	The amount of liquid that the vegetable contains	It is impossible to have a fair testing for each vegetable because if all of the amounts of liquid were the same, it means that they are all the same vegetable, so we will be unable to compare.
Controlled Variable 1	Temperature of the drying oven	Set the drying oven the same temperature at all times
Controlled Variable 2	Cutting the vegetable in smaller pieces	So that the inside of the vegetable is visible so it's easier to see the difference after getting dried up
Controlled Variable 3	Time spent in the drying oven	So that all the vegetables have equal amounts of getting dried
Controlled Variable 4	Measure the mass of the vegetables	So that we can find out how much liquid came out of each of the vegetable (and so that we can show the change in amounts of liquid in percentages).

List of Apparatus:

List of apparatus/materials	Quantity (How many of each?)

Materials	Quantity
<ul style="list-style-type: none"> • Tomato - yurina • Cucumber - risa • Potato - yurina • Eggplant - risa • Bell pepper - risa • Celery - yurina • Cauliflower - risa • Zucchini - yurina • Oven • Cooking paper • Measuring scale • Cutting board • Knife 	<ul style="list-style-type: none"> • 1 Big tomato • 1 Cucumber • 1 Potato • 1 Eggplant • 1 Bell pepper • 1 Celery • 1 Cauliflower • 1 Zucchini • 1 oven • 1 sheets of cooking paper • 1 measuring scale • 1 Cutting board • 1 Knife

Diagram of Experimental Setup (Use scientific diagrams in your drawing; use a ruler; label carefully with straight lines; OR USE GOOGLE DRAW to create a diagram):



Method (*Step-by-step procedure; mention where you will pay particular attention to the controlled variables*):

1. Cut all of the vegetables in small pieces
2. Before experimenting, measure the mass of each of the vegetables using a measuring scale.
3. Place all of the vegetables on 1 sheet of cooking paper
4. Put the vegetables (still placed on cooking paper) inside the oven
5. Set the oven at 130°C
6. Put the vegetables inside the oven for 2 hours
7. Take the vegetables out of the oven
8. After the vegetables are dried, measure the mass of each vegetable again to see the changes in mass.
9. Repeat the steps from step 1 until step 8 again for two more trials.
10. Observe the results and consider whether the trials had similar results.

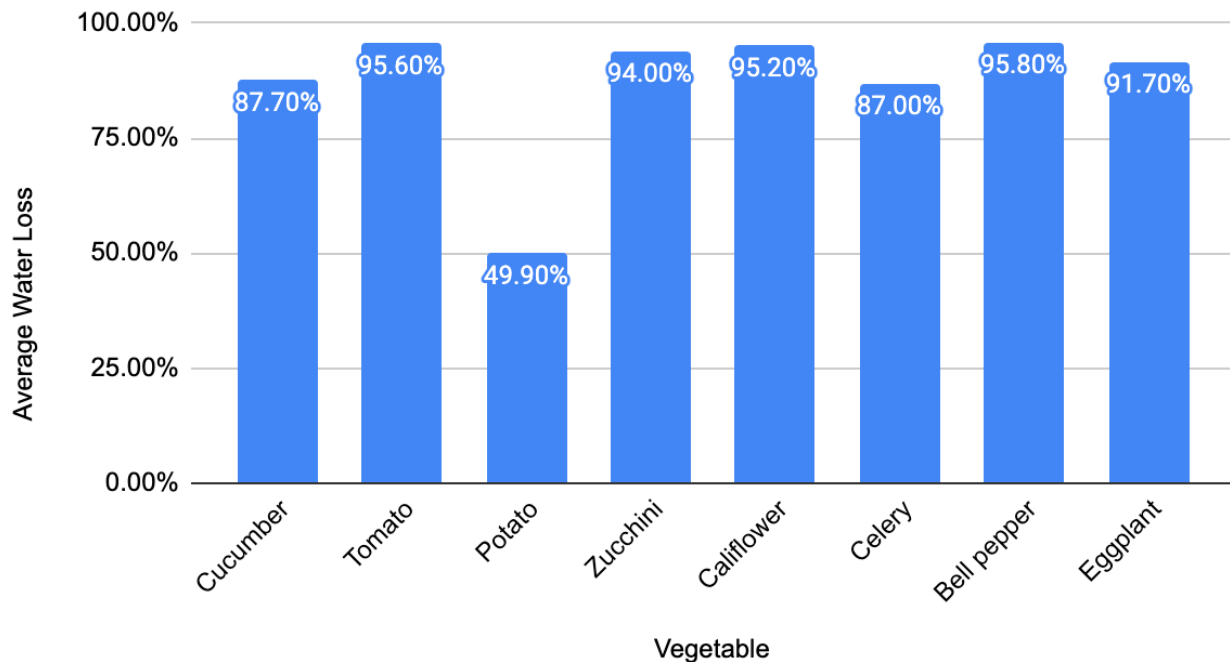
Data Table (*Prepared for data collection; include a title; use a ruler if writing OR CREATE A TABLE WITHIN THIS DOCUMENT; don't forget units; round to same d.p.; include a column for calculating averages*):

Vegetable:	Trial 1		Trial 2		Trial 3		Average Water Loss
	Water Loss (g)	Water Loss (%)	Water Loss (g)	Water Loss (%)	Water Loss (g)	Water Loss (%)	
Cucumber	6	85.7%	9	90.0%	8	100.0%	91.9%
Tomato	20	80.0%	21	95.5%	20	95.2%	90.2%
Potato	9	56.3%	11	45.8%	10	47.6%	49.9%
Zucchini	12	85.7%	16	88.9%	16	84.2%	86.3%
Cauliflower	21	87.5%	22	81.5%	13	86.7%	85.2%
Celery	8	88.9%	7	77.8%	6	100.0%	88.9%
Bell pepper	21	87.5%	20	90.9%	22	88.0%	88.8%
Eggplant	13	92.9%	11	84.6%	9	90.0%	89.2%

Data Analysis (Graph/s should be attached next. It is best to hand-draw a graph at this point and just scan into your document. Or if submitting as a hard-copy, you can staple your graph into your lab report.):

Write how we got the average in words.

Average water loss of each vegetable



Conclusion (Discuss your results and their implications. Discuss trends seen in data, analysis changes, causes and effects, etc.):

From this research, we found out that bell pepper contained the most water/liquid, and as we had expected, potato contained the least amount of water/liquid. We believe that the reason why bell pepper had the most water loss was because the inside of the vegetable was hollow which made it

easier for it to dry up. While the potato had the least amount of water loss because the skin of the potato is thicker compared to the other vegetables, which possibly made it harder for the heat to go through the potato.

In the data we saw that Trial 1 and Trial 3 had the most similar percentages when it came to water loss. The reason for this may be that the masses of each of the vegetables were close.

In our hypothesis we had predicted that tomato would contain the most liquid. However, we were incorrect. We think that the possible reason for this is because the tomato we were referring to in the hypothesis were mini tomatoes, while the tomato we dried was a large tomato, which has a thicker skin, therefore we made a wrong assumption.

Evaluation:

	Limitations in the design (Problems with the plan)	Suggestions for improvement
1	We didn't cut the vegetables into the same masses, which caused our results to differ, depending on each trial.	We could improve by cutting the vegetables into either the same or similar masses.
2	The oven had the limitation of only being able to go up to 1 hour and 30 minutes, so while the oven was set back up again it had a short amount of cooldown for the vegetable which could have affected the result.	We can keep track of the time so that all the vegetables receive the same amount of time under the heat of the oven.

3	For trial 2 and 3 the vegetables were put into the fridge for it to not go to waste which could have decreased more time for the vegetables to dry up.	For improvement, we can experiment on the same day, to reduce the time between each trial so it would have similar results.