OMEIAT SCIENCE FAIR PROJECT REPORT

(For Academic Year 2025 – 2026)

Synopsis:

To Observe how carbon dioxide gas in carbonated water interacts with raisins, demonstrating principles of buoyancy and gas behaviour.

LEVEL	**PRIMARY LEVEL**
CATEGORY	**PHYSICAL SCIENCE**
ACADEMIC YEAR	**2025-2026**

SUBMITTED BY : **L.Shashmitha**

CLASS : **V – A**

SCHOOL : **FATHIMA CENTRAL SENIOR SECONDARY SCHOOL,**

No.4, Police Lane, Saidapet West, Chennai – 600015(TN – IND)

APPLICATION FOR VIRTUAL NSF – 2025

1. Name of the Student : **L. Shashmitha**
2. Class in which Studying : **V – A.**
3. Address of School : **Fathima Central Senior Secondary School, No.4, Police Lane, Saidapet, Chennai – 600015 (TN – INDIA).**
4. Is School a member of OMEIAT : **YES**.

(It is for information only, the event is open for all)

5 . Title of the Project : **An Investigation into the Oscillatory Motion Of Raisins in Carbonated Water**

6. Category of the Project : **PRIMARY LEVEL - physical science**

7. Online application number : **NSF2324718**

8. Contact number of the Student : **+91-9940295167**

9. Name of the Teacher Guide : **Ms. Zafaa**

10. Contact number of Teacher Guide : **+91-8754531168**

11. Passport Size Photo (PI Uploaded) :

12. Bonafide Certificate (up loaded) :

TABLE OF CONTENTS:

An Investigation into the Oscillatory Motion of Raisins in Carbonated Water

a. Introduction:

The Dancing Raisin experiment is a simple yet fascinating way to observe the effects of carbon dioxide bubbles in a carbonated drink. When raisins are dropped into a fizzy liquid like soda or sparkling water, they initially sink due to their density. But soon, bubbles of carbon dioxide begin to cling to their wrinkled surfaces, lifting them upward. Once the bubbles pop at the surface, the raisins sink again—creating a cycle of rising and falling that looks like dancing!

b. Selection of Problem/Background Information:

Raisins are denser than water and should sink. They do sink initially, but then inexplicably rise and fall in carbonated water.
This investigation aims to analyse the role of dissolved carbon dioxide (CO_2) and the surface characteristics of the raisin as the primary drivers of this observed oscillatory motion, thereby explaining the physical principles governing the "dancing raisin" effect.

c. Hypothesis:

If carbon-dioxide co2 bubbles adhere to the rough surface of the raisin, then the combined volume of the raisin and bubbles will increase, temporarily decreasing the overall density and increasing buoyancy, causing the raisin to rise.

d. Materials used for the Project:

1. Clear Carbonated Water (or soda)
2. Plain/Still Water
3. Raisins (small seedless)
4. Clear/transparent glass Tumbler
5. Stopwatch

e. Experimental Procedures:

Experiment 1:

Drop 3-5 raisins into a container of plain, non-carbonated water (They should sink and stay at the bottom). Record this observation.

Procedure:

1. Take Still/Plain water in clear glass
2. Drop 3-5 raisins into the water
3. Observe the placement of raisin in the glass tumbler
4. Note down the time that the raisins reach at the bottom of the glass tumbler

Experiment 2:

Drop 3-5 raisins into a glass tumbler of carbonated water (Eg., Soda). Record this observation.

Procedure:

1. Fill the container with carbonated water. Record the initial height of the liquid.
2. Drop 3-5 raisins into the carbonated water
3. Observe the placement of raisins in the glass tumbler
4. Measurement Protocol: The key metric is the rate of oscillation

5. Record the time the raisins hit the bottom of the glass
6. Record the time that raisin rise to the top and starts dancing up and down
7. Record the time that the raisins completely hit the bottom of the glass

f. Data Analysis:

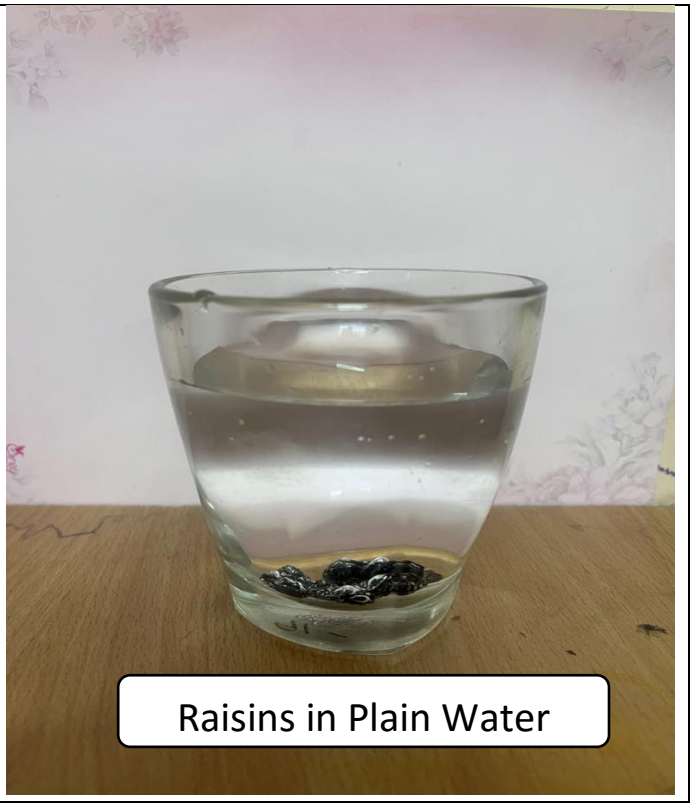
TABULAR COLOUMN 1: (In Plain Water)

Time (minutes)	Observation	Explanation
0 Sec	Raisins sink to the bottom	In Plain water, raisin will sink to the bottom of the glass at the moment raisins are dropped

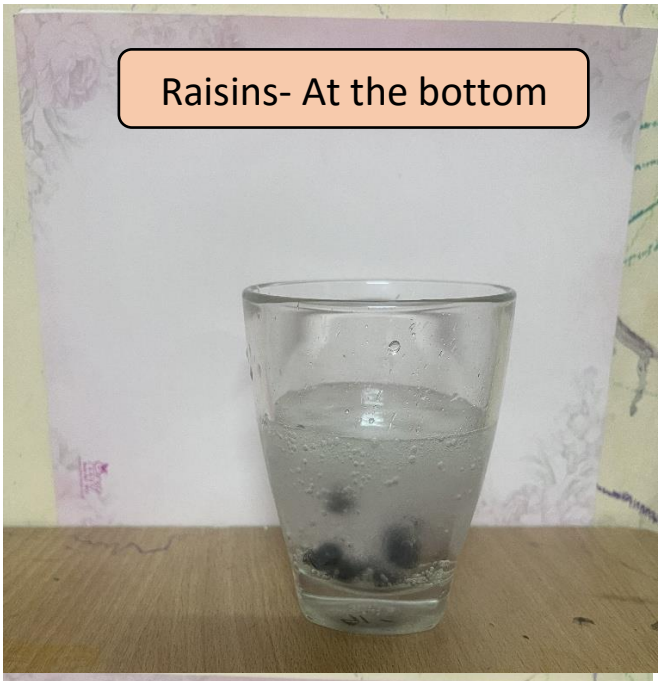
TABULAR COLOUMN 2: (In Carbonated Water)

Time (minutes)	Observation	Explanation
0 Sec	Raisins sink to the bottom	No bubbles yet; raisins are denser than the liquid
1-2 Sec	Small bubbles begin forming on raisin surfaces	Carbon dioxide starts attaching to the rough texture of raisins
3-4 Sec	Raisins begin to rise slowly	Accumulated bubbles increase buoyancy
5-6 Sec	Raisins reach the surface and bubbles pop	Loss of buoyancy causes raisins to sink again
7-10 Sec	Raisins repeat rising and sinking -“dancing” effect	Continuous gas release keeps the cycle going

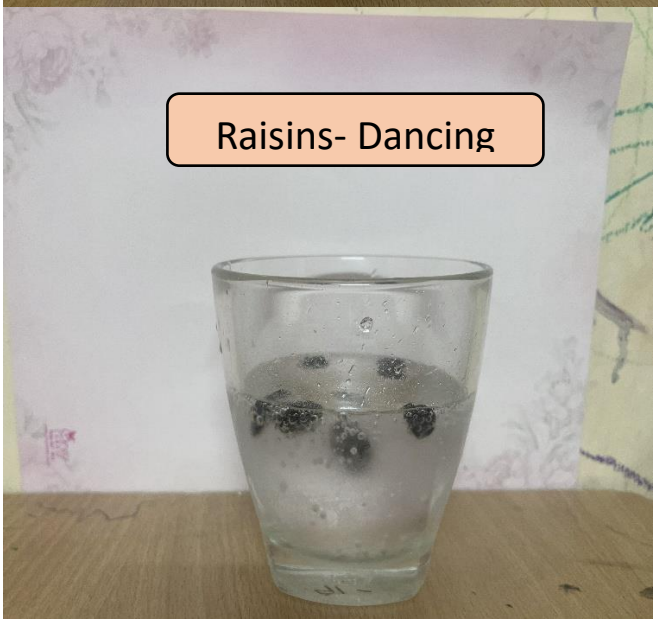
g. Images:




Soda Water


Raisins- At the bottom


Raisins- Rise up


Raisins- Dancing


Raisins- Sink

j. Observation:

- Raisin's density > Liquid's density.
- Co2 gas leaves the solution and forms bubbles, which stick to the raisin's rough surface.
- The collective volume of the raisin + bubbles increases significantly, but mass only increases negligibly.
- This drops the overall density below that of the water, causing it to rise due to Buoyancy.
- At the surface, the bubbles burst and the CO2 escapes into the air. The raisin loses the extra volume and buoyancy, its density increases, and it sinks to repeat the cycle.

k. Conclusion:

The dancing motion of the raisins in carbonated water is a demonstration of buoyancy change, where CO2 bubbles adhere to the rough surface, increasing the raisin's volume and causing it to float until the bubbles burst at the surface, which causes the raisin to sink and the cycle to repeat.