

nw = no water
w = water

Christina K.
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"Yeast and Caffeine Experiment"

Concentration: 0g

Test #	Qualitative Observations	W displaced
1	0min - yeast solution pale beige, opaque. solution is warm to the touch. a portion of the yeast is settled at the bottom of the squeeze bottle. 28ml inverted 72 not inv.	22ml
	5min - yeast is starting to bloom on the bottom and top of squeeze bottle. little bubbles of yeast foam float to the surface of the water. 10min - yeast is flowing through tube, bubbles are coming out of the vinyl tubing underwater relatively slowly ~ every 5 seconds. 15min - bubbles are coming out quicker ~ 3 second	
2	large bubble will come out and then a small one will come out right after very quickly. yeast foam in the tube is increasing. 20min - yeast in tubing significantly increased. bubbles still coming out at a constant rate. no change in color of yeast solution. 25min - yeast solution cooler than starting temp. yeast foam in tubing increased slightly. no change in colour from the starting colour.	
3	0min - most of yeast settled on the bottom of squeeze bottle. W. start level 27ml pale beige in color, opaque. solution warm to the touch. 5min - no bubbles in collection tube. 2cm of yeast is blooming at the bottom of the squeeze bottle. 10min - bubbles have started forming. bloomed yeast on the bottom is moving to the surface of the water.	

Hilroy

Concentration: 0g

Test #	Qualitative Observations	W/Displaced
2	15min - no yeast foam in tubing - bubbles coming out at a rate of $\sim$ approx 5 seconds 20min - yeast foam is now visible in the tube - bubbles coming out at a slower rate $\sim$ every 8 seconds - less bloomed yeast at the bottom of squeeze bottle and more at the top 25min - yeast foam in tube has doubled - solution temp is cooler than starting temp - no change in color from starting - yeast blooms at the bottom of squeeze bottle have reduced	18mL

Concentration: 1g

Test #	Qualitative Observation	W/Displaced
1	0min - yeast solution pale beige opaque - yeast is mostly settled at the bottom 26mL start level 5min - yeast bloom on the bottom has increased in height - no bubbles forming - yeast bloom bubbles to the top and is most active at this time 10min - no bubbles forming - no yeast foam in tubing - yeast blooms on bottom of bottle slightly increased in height 15min - not much change - yeast bloom height is the same - no bubbles in tubing	

Test #	Qualitative Observations	w/Displaced
1	- no change in colour 20min - no change in colour, gas activity (CO_2 produced; visible), level of yeast bloom - more pronounced bubbles in yeast bloom - In between 20-25min - bubbles began forming and exiting the tube rapidly 25min - minimal water displacement - no change in colour, yeast bloom height - yeast bloom present in the tube - water is a cooler temp than starting - bubbles come out in intervals very rapidly and then a pause and then rapid again	8mL
2 start level 23mL	0min - pale beige colour opaque - yeast bloom settled at the bottom, small in height - solution is warm to the touch 5min - yeast bloom has increased - no bubbles being released - yeast bloom is bubbling to the top 10min - yeast bloom has increased - no change in colour - no bubbles exiting the tube - thinner layer of yeast blooms on surface 15min - yeast bloom increased on both the bottom and the surface - no bubbles - bubbles in the bottom yeast bloom more pronounced 20min - no increase in yeast blooms (surface and bottom)	

Hilary

Test #	Qualitative Observations	w/displaced
2	- bubbles started exiting tube 25min - bubbles exiting tube are longer and more elongated than the other tests - yeast foam present in the vinyl tubing	8

Concentration: 5g

Test #	Qualitative Observations	w/displaced
1	0min - yeast blooms on bottom are larger than usual	
w. start level 25 ml	↳ the coffee powder doesn't fully dissolve so could be part of the yeast bloom height - solution pale beige opaque and warm to the touch 5min - separation of the yeast and coffee is more apparent/visible - no yeast blooms at the top of squeeze bottle - leaking has started from top of squeeze bottle - no bubbles 10min - no bubbles exiting tube - yeast bloom is growing and has increased in height - leaking has appeared to stop 15min - bubbling of yeast blooms from bottom to surface starting - the colour seems slightly less yellow than the other trials much closer to whitish cream colour - no bubbles forming 20min - yeast blooms on surface of water - yeast blooms on the bottom of the water has increased	

Test #	Qualitative Observations	w/displaced
1	- no bubbles exiting the tube 25 min - no bubbles - solution is slightly cooler than starting - bottom yeast bloom has increased slightly	0ml
2	0 min - very pale cream in colour, opaque - I mostly noticed the caffeine settled on the bottom	
w start	solution warm to the touch	
level		
28ml	5 min - the layer of yeast bloom is slightly more visible - no bubbles exiting the tube 10 min - yeast bloom increased in height $\sim 3x$ - no bubbles exiting tube - not much physical change since last time interval 15 - small layer of yeast bloom on surface - bubbling of bottom yeast bloom to surface has started - no bubbles exiting tube - no foam in the tube - yeast bloom slight increase in height (base) 20 min - not much overall visible change - bubbling of yeast from bottom to surface still continues - no increase in height of yeast blooms - no bubbles exiting tube - no foam in tube 25 min - temp cooler than start - colour same as start - bubbling yeast to the surface continues	

Kiley

Test #	Qualitative Observations	W/Displaced
2	• yeast foam in the cap but not the tube • base yeast growth/bloom slightly taller in height • 2-3 bubbles 1 in particular was very elongated ~ 5cm	1 mL

Concentration: 8g

Test #	Qualitative Observations	W/Displaced
1	• 0min - solution warm to the touch • thick ~ 2cm layer of effluvia settled at the bottom w a thin lay ~ 0.5cm of yeast on top	
3min	• very light pale cream colour • 5min - yeast bloom on bottom shows no signs of increase • thin layer of yeast at the top of squeeze bottle • no bubbles • no foam in tube	
10min	• yeast bloom on base has increased in height • no bubbles forming in tube • no foam in tube • layer of yeast on surface has not gotten thicker	
15	• no visible increase in height from bottom yeast bloom • top yeast bloom appears to be shrinking • water is murkier than the other tests • no bubbles • no foam	
20min	• bottom yeast growth increased in height slightly	

Test #	Qualitative Observations	w/d displaced
1	- around the same thickness as the settled caffeine on the base - no bubbles forming - no foam in the tube 25 min - no apparent change in yeast blooms (top + bottom) - no foam in tube - no bubbles - colour seems lighter than the original - temp. is cooler than starting	0 mL
2	0 min - pale cream colour → almost clear colour but opaque w. start - warm to the touch last 25 min - mostly settled caffeine is visible on the bottom 5 min - thin layer of yeast bloom ~ 0.3 cm of yeast bloom visible on top of settled caffeine - no yeast growth at surface - no bubbles, or foam in tubing 10 min - yeast growth on bottom 2x in height - no surface yeast growth - no bubbles or foam in tubing 15 min - yeast bloom on bottom is same thickness as caffeine - no surface yeast growth - no bubbles or foam in tubing 20 min - not much visible change since last interval - no visible growth from yeast on bottom	

History

Test #	Qualitative Observations	w/displaced
2	• no bubbles or foam in tubing • no surface yeast growth • 25 min - slight increase in height of bottom yeast growth • no bubbling of yeast from the bottom to the top • no change in colour from original • temp. cooler than starting • no bubbles, foam in tubing • no water displaced	One

"Effect of Caffeine on Candida Growth"

Concentration 0g

Test #	Observations	Water displaced
1	0 min • dark beige colour • layer of yeast settled on the bottom of squeeze bottle • white foam on surface of water 5 min • no bubble exiting tube • surface foam level increasing 10 min • yeast foam on bottom of squeeze bottle increased in height • yeast foam in collection tube • bubbles starting to exit collection tube slowly 15 min • yeast foam in CO₂ collection tube increasing • bubbles consistently exiting collection tube • graduated cylinder water level decreasing 20 min • bubbles exiting tube more frequently • bubbles exiting tube longer • yeast foam travelling further down CO₂ collection tube 25 min • one large bubble travels to the end of collection tube, and stays there while smaller bubbles remove themselves from the "parent"	21 mL

Concentration Og

Test #	Observations	Water displaced
2	0 min - Starting level 26 mL • solution is pale beige • yeast settled on bottom of squeeze bottle • no bubbles • no foam 5 min • white foam on surface of squeeze bottle • yeast blooms on bottom have increased • no bubbles exiting the collection tube 10 min • bubbles starting to exit collection tube ↳ parent bubble system • no yeast foam in tube • yeast growth increased in height on the bottom of squeeze bottle ↳ slowly bubbles float to the top 15 min • yeast entered collection tube • bubbles exiting more consistently from collection tube ^{between yeast and foam} • middle layer of water is lighter 20 min • yeast foam consistently leaving squeeze bottle into collection tube • bubbles exiting collection tube quicker 25 min • foam in collection tube traveled further • yeast growth on bottom decreased in height	23 mL

Concentration: 1g

Test #	Observations	Water displaced
	0 min - Start level 26 mL • deep yellow fauce • yeast foam on bottle of squeeze bottle • white foam on top of squeeze bottle	1 mL
	5 min • yeast blooms on bottom increased in height • no foam in collection tube	
	10 min • yeast foam on bottom of squeeze bottle height increased • solution is a lighter - light grey • no bubbles exiting tube	
	15 min • yeast foam at bottom of squeeze bottle steadily increasing • no bubbles exiting the tube	
	20 min • yeast foam on bottom of squeeze bottle not increasing in height • white foam on surface increased • no bubbles exiting tube started at 23 min • yeast leaving squeeze bottle	
	25 min • after leaving it overnight, all the water in the graduated cylinder was gone • noticed the yeast in collection tube bubbling but not moving ↳ same thing was seen after school approx 15 hours after test ended	

Concentration: 1g

Test #	Observations - 26ml start level	Water displaced
2	0 min • yeast growth present on bottom of squeeze bottles • light cream colour • opaque 5 min • yeast growth on bottom increased in height • yeast growth is bubbling to the surface of squeeze bottle • continues to grow steadily * 9 min bubbling of yeast to the surface, no longer visible 10 min • bubbling of yeast to the surface restarts and quickly • before bubbling yeast growth was tall in height ~ 2cm → then a large section bubbled to the surface decreasing height • cream foam on surface of squeeze bottle 15 min • yeast growth on surface increased → but it is not going into the top of the cap • little bubbles present in bottom yeast growth * bubbles exit collection tube at 17 min 20 min • bubbles exiting tube at a consistent pace → in parent system • both bottom and surface yeast growth increased in height	9 ml

Concentration 1g

Test # Observations

Water displaced

2

25 min

9 ml

- bubbles continue to exit collection tube
- yeast growth on bottom has formed these little clumps on the surface of the main growth
- surface yeast growth appears more foam like and less dense

Concentration 5g - 26 ml start level

1

0 min

0 ml

- solution dark cream
- visible variation between settled yeast and caffeine
- white foam present on surface of solution in squeeze bottle

5 min

- caffeine settled on bottom with yeast on top
- no colour change
- no "bubbling" yeast

10 min

- variation between caffeine and yeast more clear
- yeast looks like it is going to start to bubble to the surface
- hole has formed in caffeine and yeast layer

15 min

- yeast starting to bubble to the surface
- yeast growth increasing in height

Concentration 5g

Test #	Observation	Water displ.
1	20 min • yeast growth continues to grow and bubble to the surface • whitish foam on surface increasing 25 min • surface foam increased • yeast growth at bottom larger height than caffeine • no bubbles exited the collection tube	0 mL

Concentration 5g

2	0 min • solution is like warm • caffeine settled on bottom with a thin layer of yeast on top • light, white foam present on solution surface • pale taupe colour 5 min • leaking has started • variation between caffeine and yeast more visible • whitish foam on solution surface decreased 10 min • bottom yeast growth increased in height taller than caffeine height • white foam on surface not visible 15 min • bottom yeast growth increased in height greatly • no bubbling surface • no bubbles exiting tube • decreased temp	
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Concentration 5g

Test #	Observation	Water displaced
2	20 min - bottom yeast growth "bubbling" to the surface - whitish foam present - no bubbles exiting collection tube 25 min - light cream foam on surface increased - yeast bubbling to the surface continues - no CO_2 bubbles were produced	0ml

Concentration 8g - start level 28

1	0 min - thick layer of caffeine on bottom ↳ forming clard like structures - light beige colour - yeast is slightly visible 5 min - yeast appears to be forming around the caffeine - white foam on solution surface 10 min - yeast growth on bottom increasing in height - no bubbling of yeast to the surface 15 min - bubbles exiting collection tube sporadically - surface growth increasing - bottom yeast bubbling to the top 20 min - yeast entering collection tube - bubbling of yeast to the surface stopped - no bubbles exiting collection tube	
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Concentration 8g

Test #	Observations	Water displaced
1	yeast in tube increased 25min • caffeine appears stuck to walls of squeeze bottle	8
Concentration 8g - start level 38		
2	0min • thick layer of caffeine on bottom of squeeze bottle • pale yeast foam on surface of solution • solution is taupe colour 5min • yeast layer on top of caffeine more visible • no yeast in collection tube • opaque 10min • yeast on top of caffeine is more leveled • no bubbles exiting collection tube • no bubbling of yeast to the surface 15min • surface yeast growth entering cap • yeast and caffeine layers defined 20min • no bubbles exiting collection tube • no change in colour, yeast growth 25min • minimal change from start • yeast appears to have increased in height slightly • slightly lighter colour from beginning light cream	0ml

visible