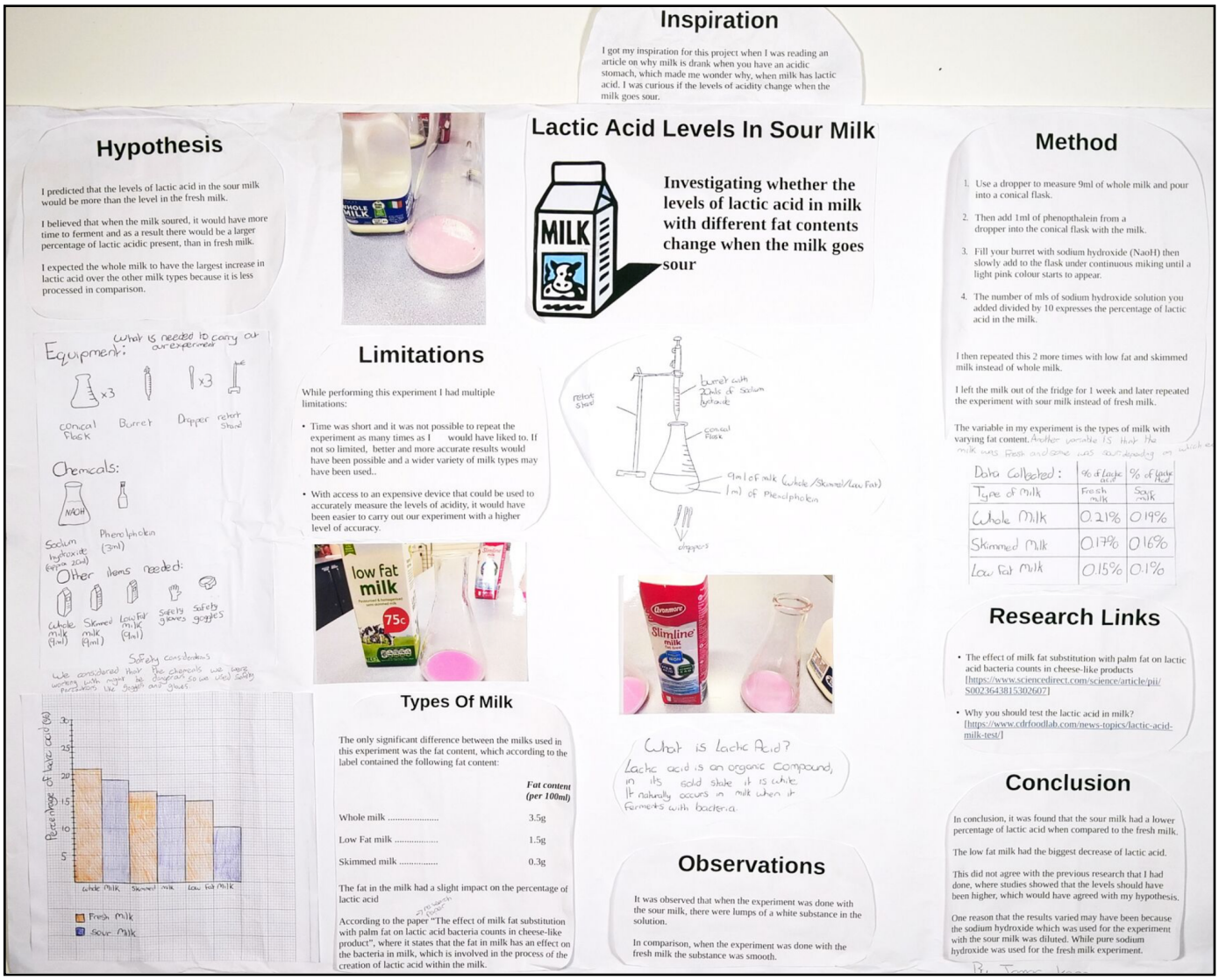
MRB 1 Iniúchadh Turgnamhach Sínte



Inspiration

I got my inspiration for this project when I was reading an article on why milk is drank when you have an acidic stomach, which made me wonder why, when milk has lactic acid. I was curious if the levels of acidity change when the milk goes sour.

Hypothesis

I predicted that the levels of lactic acid in the sour milk would be more than the level in the fresh milk.

I believed that when the milk soured, it would have more time to ferment and as a result there would be a larger percentage of lactic acidic present, than in fresh milk.

I expected the whole milk to have the largest increase in lactic acid over the other milk types because it is less processed in comparison.

Lactic Acid Levels In Sour Milk

Investigating whether the levels of lactic acid in milk with different fat contents change when the milk goes sour

Method

1. Use a dropper to measure 9ml of whole milk and pour into a conical flask.
2. Then add 1ml of phenopthalein from a dropper into the conical flask with the milk.
3. Fill your burret with sodium hydroxide (NaoH) then slowly add to the flask under continuous miking until a light pink colour starts to appear.
4. The number of mls of sodium hydroxide solution you added divided by 10 expresses the percentage of lactic acid in the milk.

I then repeated this 2 more times with low fat and skimmed milk instead of whole milk.

I left the milk out of the fridge for 1 week and later repeated the experiment with sour milk instead of fresh milk.

The variable in my experiment is the types of milk with varying fat content. Another variable is how the milk was fresh and sour and accordingly on which

Data Collected:	% of Lactic acid	% of Lactic Acid
Type of Milk	Fresh milk	Sour milk
Whole Milk	0.21%	0.19%
Skimmed Milk	0.17%	0.16%
Low Fat Milk	0.15%	0.1%

Limitations

While performing this experiment I had multiple limitations:

- Time was short and it was not possible to repeat the experiment as many times as I would have liked to. If not so limited, better and more accurate results would have been possible and a wider variety of milk types may have been used..
- With access to an expensive device that could be used to accurately measure the levels of acidity, it would have been easier to carry out our experiment with a higher level of accuracy.

Types Of Milk

The only significant difference between the milks used in this experiment was the fat content, which according to the label contained the following fat content:

	Fat content (per 100ml)
Whole milk	3.5g
Low Fat milk	1.5g
Skimmed milk	0.3g

The fat in the milk had a slight impact on the percentage of lactic acid

According to the paper "The effect of milk fat substitution with palm fat on lactic acid bacteria counts in cheese-like product", where it states that the fat in milk has an effect on the bacteria in milk, which is involved in the process of the creation of lactic acid within the milk.

Research Links

- The effect of milk fat substitution with palm fat on lactic acid bacteria counts in cheese-like products [https://www.sciencedirect.com/science/article/pii/S0023643815302607]
- Why you should test the lactic acid in milk? [https://www.cdrfoodlab.com/news-topics/lactic-acid-milk-test/]

Conclusion

In conclusion, it was found that the sour milk had a lower percentage of lactic acid when compared to the fresh milk.

The low fat milk had the biggest decrease of lactic acid.

This did not agree with the previous research that I had done, where studies showed that the levels should have been higher, which would have agreed with my hypothesis.

One reason that the results varied may have been because the sodium hydroxide which was used for the experiment with the sour milk was diluted. While pure sodium hydroxide was used for the fresh milk experiment.

Observations

It was observed that when the experiment was done with the sour milk, there were lumps of a white substance in the solution.

In comparison, when the experiment was done with the fresh milk the substance was smooth.

Eolaíocht na Sraither Sóisearaí MRB 1 Bhliain a Dó

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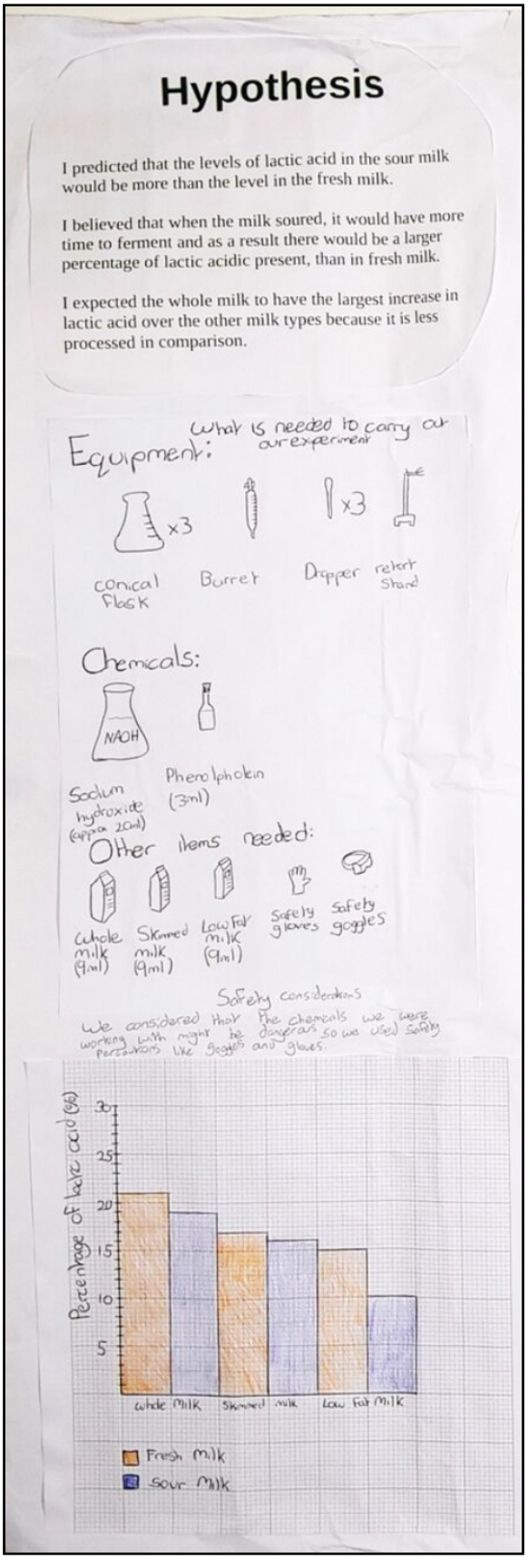

1. Ceaptar hipitéis is féidir a thástáil nó tuar lena bhfuil údar.

2. Tugtar breac-chuntas ar an trealamh a úsáideadh leis na sonraí a bhailiú agus a thaifeadadh.

3. Tugtar breac-chuntas ar chúinsí sábháilteachta.

4. Léirítear sonraí le léirithe faisnéiseacha.

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5. Baintear tátal as a thagann leis na sonraí.

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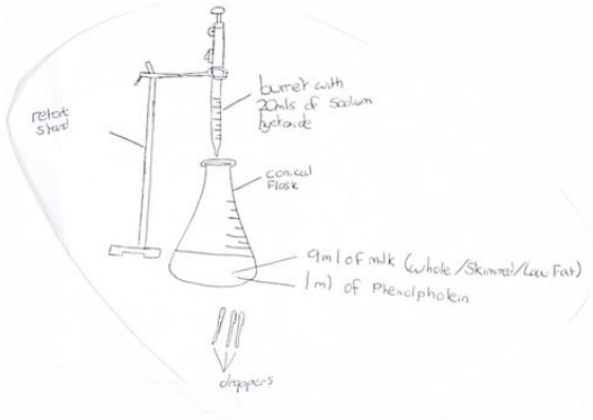

What is Lactic Acid?

Lactic acid is an organic compound, in its solid state it is white. It naturally occurs in milk when it ferments with bacteria.

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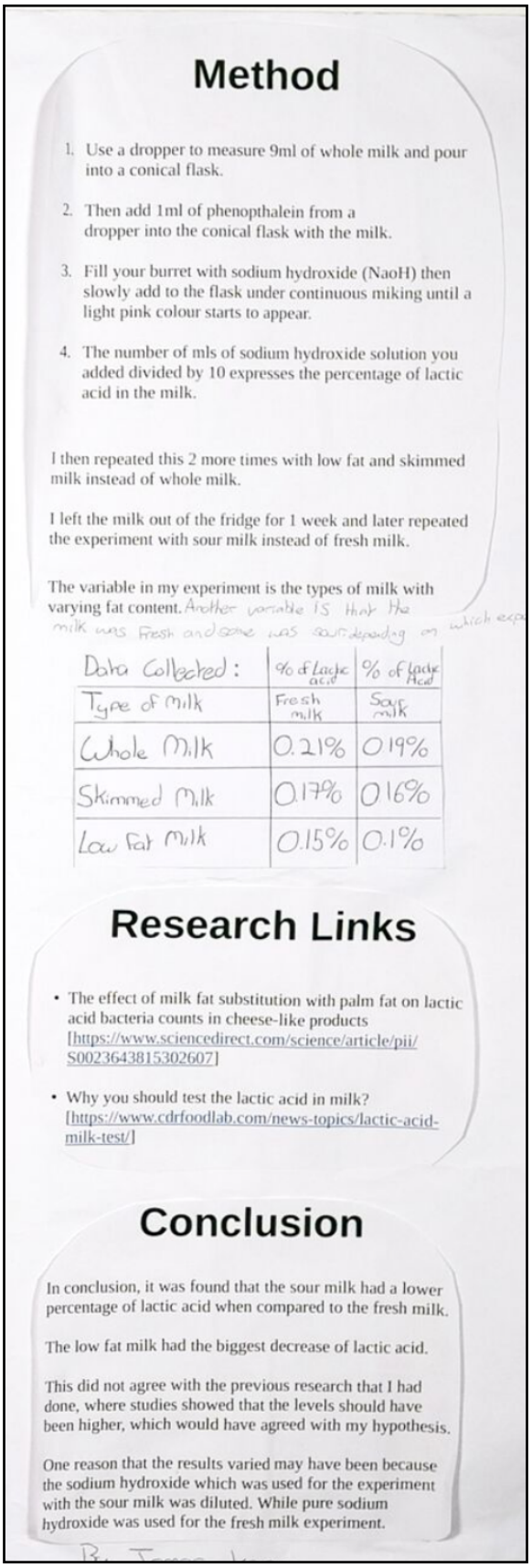

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6. Moltar feabhsuithe.

7. Taifeadtar sonraí Loma.

8. Sainaithnítear srianta agus moltar réimsí le feabhsú.