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To investigate the effect of milk on the lower of temperature on hot black coffee

Mr. Doyle likes his coffee hot, with or without milk. In this investigation, we tried putting 2 cup of coffee, one with milk and one without, in the same condition and we want to find out which can stay hot more longer.

Question:

Prediction: I think the coffee without milk will stay warm longer because the coldness of the milk will lower the temperature of the coffee, thus allowing it to cool down faster.

Equipment:

2 beakers

2 packs of Coffee powder

Cold milk

Hot Water

2 thermometers

Timer

Pen

Paper

Procedure:

1. Add 1 pack of coffee powder in each beaker and add 200 ml of hot water into the beaker
2. Add 50ml of milk into one of the beakers
3. Put the two beakers close to each other in an average temperature and condition.
4. Put one thermometer in each beaker simultaneously
5. Record the temperature every 3 minute for 5 times.

|  |  |  |
| --- | --- | --- |
| **Time(Minute)** | **Temperature** | **(°C)** |
|  | With Milk | Without Milk |
| 0 | 62 | 62.5 |
| 3 | 59 | 59 |
| 6 | 55 | 53 |
| 9 | 53 | 50.5 |
| 12 | 51 | 48 |
| 15 | 49.5 | 46 |

Conclusion – The coffee with milk starts with less temperature than black coffee but it stays warm longer and cools down slower. Because it takes the same amount of time for both cups of coffee to reach equilibrium, so the coffee with milk, with less temperature, with a head start, will cool down slower and stay warmer than the black coffee.

I used to think that coffee with more heat will stay warm more longer but now I know that it is not true because it take less time for it to reach the average surrounding temperature.