

Experiment 1: Different temperatures

Method:

To know if the temperature of the oil makes a huge difference on the absorption of the oil in a mandazi, three different temperatures will be tested: 150 degrees, 180 degrees and 210 degrees. The dough of the mandazi and the frying process will be the same as described in [the standard experiment protocol](#). Only the temperature will be different. A lower/higher temperature means that the mandazi has a longer/shorter frying period until it's ready. That is why the mandazi will be fried until it's ready. The time will be noted.

Results

150 degrees (12 minutes, 6 minutes each side)

	Weight start	Weight after frying	Weight after being baked in the oven for 1 hour	Weight after being baked in the oven for 2 hours	Weight after undecided time in the oven
Big 1	115	133	109	103	102
Big 2	115	133	108	102	102
Little 1	40	43	35	35	35
Little 2	40	45	36	35	35
Little 3	40	46	36	36	36
Little 4	40	47	37	36	36

180 degrees (6 minutes, 3 minutes each side):

	Weight start	Weight after frying	Weight after being baked in the oven for 1 hour	Weight after being baked in the oven for 2 hours	Weight after undecided time in the oven
Big 1	115	118	101	84	84
Big 2	115	118	101	85	84
Little 1	40	42	35	32	31
Little 2	40	41	34	31	31
Little 3	40	41	35	32	32

Little 4	40	41	35	32	31
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210 degrees (3 minutes, 1,5 minutes each side)

	Weight start (grams)	Weight after frying (grams)	Weight after being baked in the oven for 1 hour (grams)	Weight after being baked in the oven for 2 hours (grams)	Weight after undecided time in the oven (grams)
Big 1	115	116	98	83	82
Big 2	115	115	97	84	83
Little 1	40	41	32	32	32
Little 2	40	40	33	32	32
Little 3	40	40	33	32	32
Little 4	40	40	32	31	31

Calculation amount of fat

150 degrees little mandazi

Dry weight:

X1 average = 40 grams/mandazi

X2 average = 22,4 grams/mandazi

Water in a mandazi before frying = $X1 - X2 = 40 - 22,4 = 17,6$ grams water/mandazi

After frying:

Y1 (weight after frying) average = 45,25 grams/mandazi

Y2 (weight after drying) average = 35,5 grams/mandazi

Water in a mandazi after frying = $Y1 - Y2 = 45,25 - 35,5 = 9,75$ grams water/mandazi

Water that evaporates during frying = $17,6 - 9,75 = 7,85$ grams water/mandazi

Amount of fat = $Y2 - X2 = 35,5 - 22,4 = 13,1$ grams fat/mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{13,1}{45,25} \times 100\% = 28,95\% \text{ fat}$$

150 degrees big mandazi

X1 average = 115 grams/Mandazi

X2 average = 66 grams/Mandazi

Water in a mandazi before frying = $X1 - X2 = 115 - 66 = 49$ grams water/Mandazi

Y1 average = 133 grams/Mandazi

Y2 average = 102 grams/Mandazi

water after frying = Y1 - Y2 = 133 - 102 = 31 grams water/Mandazi

Water that evaporates during frying = 49 - 31 = 18 grams water/Mandazi

Amount of fat = Y2 - X2 = 102 - 66 = 36 grams fat/Mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{36}{133} \times 100\% = 27,1 \text{ \% fat}$$

180 degrees little mandazi

Dry weight:

X1 average = 40 grams/mandazi

X2 average = 22,4 grams/mandazi

Water in a mandazi before frying = X1 - X2 = 40 - 22,4 = 17,6 grams water/mandazi

After frying:

Y1 (weight after frying) average = 41,25 grams/mandazi

Y2 (weight after drying) average = 31,25 grams/mandazi

Water in a mandazi after frying = Y1 - Y2 = 41,25 - 31,25 = 10,00 grams water/mandazi

Water that evaporates during frying = 17,6 - 10,00 = 7,60 grams water/mandazi

Amount of fat = Y2 - X2 = 31,25 - 22,4 = 8,85 grams fat/mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{8,85}{41,25} \times 100\% = 21,45 \text{ \% fat}$$

180 degrees big mandazi

X1 average = 115 grams/Mandazi

X2 average = 66 grams/Mandazi

Water in a mandazi before frying = X1 - X2 = 115 - 66 = 49 grams water/Mandazi

Y1 average = 118 grams/Mandazi

Y2 average = 84 grams/Mandazi

Water in a mandazi after frying = Y1 - Y2 = 118 - 84 = 34 grams water/Mandazi

Water that evaporates during frying = 49 - 34 = 15 grams water/Mandazi

Amount of fat = Y2 - X2 = 84 - 66 = 18 grams fat/Mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{18}{118} \times 100\% = 15,25 \text{ \% fat}$$

210 degrees little mandazi

Dry weight:

X1 average = 40 grams/mandazi

X2 average = 22,4 grams/mandazi

Water in a mandazi before frying = $X1 - X2 = 40 - 22,4 = 17,6$ grams water/mandazi

After frying:

Y1 (weight after frying) average = 40,25 grams/mandazi

Y2 (weight after drying) average = 31,75 grams/mandazi

Water in a mandazi after frying = $Y1 - Y2 = 40,25 - 31,75 = 8,5$ grams water/mandazi

Water that evaporates during frying = $17,6 - 8,5 = 9,1$ grams water/mandazi

Amount of fat = $Y2 - X2 = 31,75 - 22,4 = 9,35$ grams fat/mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{9,35}{40,25} \times 100\% = 23,2 \text{ \% fat}$$

210 degrees big mandazi

X1 average = 115 grams/Mandazi

X2 average = 66 grams/Mandazi

Water in a mandazi before frying = $X1 - X2 = 115 - 66 = 49$ grams water/Mandazi

Y1 average = 115,5 grams/Mandazi

Y2 average = 82,5 grams/Mandazi

Water in a mandazi after frying = $Y1 - Y2 = 115 - 82,5 = 33$ grams water/Mandazi

Water that evaporates during frying = $49 - 33 = 16$ grams water/Mandazi

Amount of fat = $Y2 - X2 = 82,5 - 66 = 16,5$ grams fat/Mandazi

$$\frac{\text{Amount of fat}}{Y1} \times 100\% = \frac{16,5}{82,5} \times 100\% = 20 \text{ \% fat}$$