Laboratory 4: Texture Analysis of Yogurt with Different Fat Contents

FST 5420 Dairy Processing

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In-Lab Analysis

1) The skim milk sample was not tasted due to the fact that it had undergone sever syneresis and most of the whey had separated from the solution. However based of tasting the other samples I would conclude that yogurt made from skim milk would have an almost watery taste and not have any mouth appeal. The yogurt made from 1% milk was also in a liquid state but a little more thicker. Upon tasting this yogurt sample it immediately melted in my mouth. This sample could be most related to Yoplait yogurt that is found in stores. I did not sample the 2% yogurt but I can conclude that the sample would be slightly thicker and not melt as much once inside the mouth. The sample created from whole milk was very thick and almost represented Greek yogurt. The mouth feel was thick and creamy along with a slightly sour after taste. This was said to be due to a longer fermentation time than the other samples.

2) The food industry most likely takes the results from the food analyzer and adjust the different factors in order to create the most satisfying taste and mouth feel according to the consumer. If the consumer would like a thicker more creamy yogurt the company may use a higher fat percentage milk in order to achieve that texture.

Plots and Comparison

![Figure 1](image-url)

Figure 1 shows the relationship between spreadability of yogurt vs. the fat content of the yogurt. As the graph shows there is no apparent trend in how well the yogurt spreads depending on the amount of fat in the milk used. However, the 1% milk has the highest spreadability of all the other samples which may relate to its high appeal in mouth feel and taste.
Figure 2 shows the comparison between firmness and fat content. Again there is no apparent relationship between the two but the 1% milk shows the highest firmness of all the samples. I expected the whole milk to show the highest firmness since it had a thicker mouth feel than the 1%.

Figure 3 shows the relation between the stickiness of the samples vs. the fat content. There is no trend between the two and in reality the numbers are quite close to each other. I would say the stickiness of yogurt would have more to do with the lactose remaining in the sample than the
amount of fat. It's also interesting to note that all of these values are negative which shows that
the yogurt was actually repelled by the probe.

Figure 4 shows the relationship between the adhesiveness of the yogurt sample and the fat
content. Again there is no relationship and all of the numbers are relatively close just like with
stickiness. Also all of the numbers are negative showing the probe and the yogurt were repelling
each other. In this case as well as with stickiness I believe it would be more related to the
remaining amount of lactose left in the sample.

**Results and Discussion**

According to the data and graphs, fat content does not have an effect of the firmness of
yogurt. However before starting the lab one could hypothesize that the firmness of the yogurt
would increase with increasing fat content. One could conclude this because by increasing the
fat content of the milk, the density would increase. Therefore increasing the firmness of the
yogurt overall. If the fermentation process was increased the taste of the product would change
as well as the composition of the product. As we saw in the whole milk sample, the product took
on a sour taste due to the high amounts of lactic acid in the sample. Also since the product was
fermenting for longer and more lactic acid was produced there was less lactose in the overall
product. One reason that researchers may use skim milk powder could be to ensure that enough
lactose is in the milk in order to support an appealing yogurt that has a high quality in taste and
texture. Another reason may be that adding the skim milk powder may increase the fat levels to
a desirable level for yogurt making.