



CHUBBLES

Introduction

Cheese has long been part of human history. Cheese was widely introduced to the world in the year 1815 when the first cheese factory in Switzerland was established after scientists discovered how to control and mass produce rennet, (Rennet is an extract from the fourth stomach of young ruminants, and will cause the milk to coagulate http://www.wisegEEK.org/what-is-rennet.htm_following Following this innovation the mass production of processed cheese began. New Zealand's first cheese company was established in 1871, since then New Zealand has become a global power in the dairy market with a need for new innovative and processed dairy products. Cheese contains a wide variety of nutrients including calcium, protein, phosphorus, zinc, Vitamins A and B12. The high quality concentrated protein contained in cheese provides the body with the essential minerals required for muscle growth and strength. (www.healthyeating.org/Milk-Dairy/...Cheese.../Nutrients-in-Cheese.aspx)

Aim: The aim of this product is to create a cheese-based snack product, for teenage girls (aged 13-18) with a variety of flavours while contributing to the recommended daily intake of calcium and protein.

Method

Ingredients:

4g unflavoured gelatin
14g water
300g Colby cheese, shredded fine
8g whole dry milk powder
2g salt
2g citric acid
3g baking soda
234g whole milk

Desired quantity of a specific flavouring (100g cranberry, vanilla paste, sundried tomato)

Directions:

- Sanitise benches, tie hair back, apron on and hands washed using soap and hot water before any ingredients is handled & processed.
- Prepare desired moulds for cheeses, ensuring they have been rinsed and dried with hot water.
- Weigh each ingredient out to ensure correct measurements are being used.
- Sprinkle the gelatine over the water in a small cup and let them sit until the gelatine softens, about 5 minutes or until needed to be added in milk.
- Meanwhile, pulse together the shredded cheese and dry ingredients in a food processor until fully combined and a breadcrumb consistency.
- Bring the milk to a boil in a small saucepan on medium heat, ensure the milk reaches 85°C for 10 seconds.
- Add gelatine once milk has reached desired temperature, followed by adding the shredded cheese & dry ingredients and begin mixing vigorously with sick blender while cheese mixture is still on the heat
- Keep mixing until temp has reach 65°C for 10-20 seconds.
- Take the cheese off the heat, pour, blend or marble in desired quantity of flavouring (cranberry, sundried tomato or vanilla) – ensure this is done quickly otherwise cheese will start to set.
- Pour into moulds, place in fridge until fully set. Consume within 48 hours.

Research & Ideas

Cheese ideas:

Cheese snacks – animal shapes, fruit burst cheese, cheese icing – savoury & cheese, chocolate, cheesecake bars, flavoured cheese – jellybean, cheese macaroons, cheese flavoured pasta, filled cheese balls, cheese playdough, curly grilled cheese, cheese powder, energy drink cheese, cheese pizza toppings, cheese pasta sauces, cheese balls, marshmallow cheese, ready-made cheese sauce.

Flavour ideas (NZ based):

Manuka honey, marmite, mince, lamb, kumara, hokey pokey, pineapple lumps, L&P, cranberry, tomato, vanilla, chilli chocolate, basil, herbs.

Who: Teenage girls

How: Finger food

When: All year round

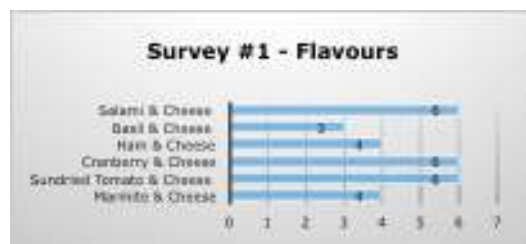
Why buy: Snack, to eat on the go, busy teenagers

Eaten when & where: Anytime, anywhere, by anyone

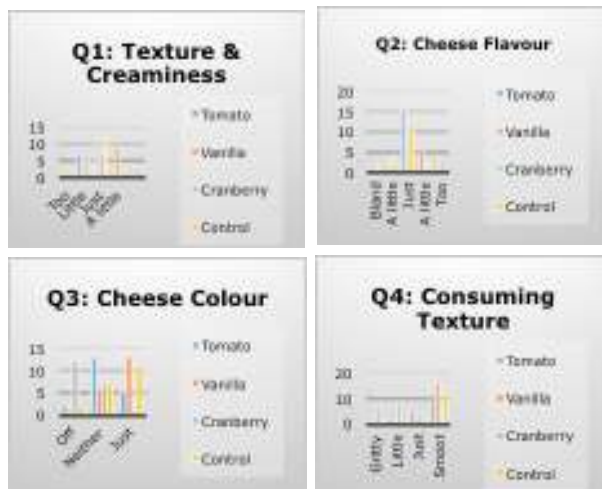


Survey's

Survey #1 – was our base survey that was used to determine what people wanted in our cheese product. Below is a graph of the flavour options we gave people.



Survey #2 – this was used during our sensory evaluation to determine which flavoured cheese people liked best. We asked 4 questions per cheese and a ranking for the best.



Trials

Emulsifiers – During all of our trials we have used two different emulsifiers, cream of tartar or baking soda & citric acid. We started with cream of tartar, as this was what our mentor suggested we use however using this we encountered many issues with the cheese splitting when it was added to the heated milk. We changed to using baking soda & citric acid as this meant that during each of trial the cheese was less likely to split, meaning we would have a higher success rate and could flavour more cheeses.

Basil, Herb & Cheese – First and only trial of using Bakers Basil & Herb was made on 1st August, changed the properties of the cheese. Adding the basil caused the cheese to lose firmness because of the ingredients especially the liquid properties in the basil. We all liked the basil cheese, however it needed more flavouring and because of the way it changed the cheese we decided to try a variety of other flavours instead.

Vanilla & Cheese – We used Hansell's Vanilla Paste for our two vanilla trials, one of which was used during the sensory tastings. Our first go using vanilla paste resulted in a lovely smelling cheese, but adding the vanilla paste to the cheese resulted in it turning the mixture into liquid that then set once it had been chilled & stored in the fridge. In our second go, the mixture again turned to liquid once we added it but set during storage in the fridge. Both trials used the same amount of vanilla and was an interesting mix to try because it smelt lovely, but taste was average but not horrible.

Sundried Tomato & Cheese – This was our favourite flavouring which we used during 3 trials. During the first trial, when we added the Bakers Sundried Tomato flavouring the cheese slightly split because of the acidity in the tomato combining with the cheese made using cream of tartar as the emulsifier. During this trial, we did not blend the cheese so during consumption we were eating pieces of the tomato which added texture to it. During the 2nd and 3rd trial we used the baking soda & citric acid emulsifier so when the tomato mixture was added, the cheese did not split. During these 2 trials we also blended the tomato to ensure the flavour was consistent through each sample of the product. Our 3rd trial was sampled by our sensory panel, and everyone loved it.

Chilli Chocolate & Cheese – We trialled this flavour to push the limits of our products because chilli & chocolate is a well-known flavour. We used Whittakers 72% Coco Dark chocolate and Gilmours Chilli flakes, we added the chocolate & chilli to the moulds before pouring the cheese in. Overall, this was a very weird flavour that left a horrible aftertaste.

Cranberry & Cheese – We used two varieties of cranberries – Ocean Spray Cranberry sauce & Sun Valley Foods Dried Cranberries in our trials. We were originally using cranberry sauce but after 4 attempts of trying to find the perfect patch to feed to our sensory panel we gave up. Every time we added the cranberry, the cheese would turn to liquid, this is because of the acidity in the cranberries. In our first trial with the cranberry, the cheese did not turn to liquid because of the small quantity of cranberry we used – however this did not have enough flavouring. Due to the issues we had with the cheese turning to liquid, we decided to use dried cranberries as the flavouring. This turned out really well, and definitely had the cranberry taste, although some of the participants didn't enjoy it.

Marmite & Cheese – Marmite was used to give our cheese flavours a NZ twist, we only made one batch using Sanitarium Marmite because when added the marmite, the cheese went to liquid. However, once chilled the mixture was set but had a mouse consistency. We thought about the possibility of using malt as an alternative to marmite, but ran out of time.

Sensory Testing

On Monday 25th of August, Chubbles hosted our sensory panel trial. The trial panel consisted of 20 people made up of a combination of year nines, year elevens, and year thirteens. This age group encompassed the full range of 13 to 18 which is our target range. The trial ran extremely smoothly, with only a few minor hiccup - we initially intended for fifteen people to undergo the trial, however due to quirks of communication we ended up with twenty persons. However, this was a beneficial error as it made the trial more valid with a larger number of participants. One observation made during the trial was that there were a few participants who chose to taste the cheese on the crackers- this may have affected their perception of the cheeses, especially regarding the texture of the cheese. When the participants entered, they were each sat down with a tray containing the four chosen cheese types- tomato, vanilla, and cranberry along with a control cheese without flavour. The tray also contained water and water crackers to eat between the cheeses to cleanse the palette so as to not taint the following cheeses as well as spoons to eat the cheese with. The participants also received a survey asking a few quick rating for each of the cheese, and a ranking of preference of all the flavours. The trial went smoothly, taking only half an hour or so to complete fully.

Conclusion

Our aim was to create a cheese-based snack product that contributes to the recommended daily intake of protein as well as contributing to other nutrients required in an adolescent girls' diet. The cheese contains 5.5% of an adolescent girls protein needs, 3% of an adolescent girls energy intake and 1.5%-1.8% of an adolescent girls calcium intake. Cheese can be effectively used as part of an adolescent girls diet and would be supportive of the required nutrients and daily needs of the diet.

This product has been a great success, as we have created flavoured cheese-based snack product that teenage girls enjoy. We, Chubbles team members – Sian Fendall, Libby Young, Raquel Lopez-Lazano and Amanda Dever-Tod have all learnt many new skills around product development, presentation and team work. We have overcome many issues to get to where we are today.

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