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DYSPHAGIA: WHAT EVERY DIETITIAN MUST KNOW ABOUT THICKENERS

Thickeners are ACBS prescribable powders, made from starch and/or gum, used to alter the viscosity of food and fluid.¹ Thickeners are used by people with dysphagia (difficulty swallowing) to slow the transit time of food and fluid in the mouth and pharynx which helps coordinate the swallowing process; this makes the bolus safer to swallow.^{1,2} Here, Sheri Taylor provides essential information on thickeners, the products available, how to mix them and also gives us insight into her own understanding of her clients' experiences.

A speech and language therapist is the one who determines whether or not someone needs thickened fluid and which viscosity is safest for that patient. A bolus thinner than what is recommended by the speech and language therapist can cause aspiration which can lead to chest infections and even death.¹ Dietitians should work in partnership with the speech and language therapist and the GP when deciding which thickener to prescribe. The primary goal is to find a thickener that the client finds palatable and is willing to use consistently. However, there are additional considerations that all dietitians need to be aware of.

Here are the top five things that every dietitian needs to know about thickeners:

1. Calories

Thickeners contain varying numbers of calories. If a client starts to gain weight shortly after starting on thickened fluid, the thickener itself may be to blame. Of course, the number of extra calories will be contingent on which thickener the patient is on, the viscosity of their drinks and how much fluid they consume each day. For 1500ml of stage 1 fluid, the calorie content of the thickener alone can range anywhere from 56-263 calories per day. For 1500ml of stage 3 fluid, the calorie content jumps to 165-504 calories per day. When deciding which thickener to recommend, the multidisciplinary team will need to

consider whether the individual wants to gain, lose or maintain his/her weight.

2. Fibre

While the traditional starch-based thickeners do not contain any fibre, the newer gum-based thickeners can contribute quite significant levels of soluble fibre to someone's diet. For some patients, the extra fibre might be helpful. For others, the soluble fibre has the potential to reduce satiety,³ cause loose stools, contribute to abdominal discomfort and/or lead to significant gas production.⁴ Be aware of this in clients with learning disabilities, dementia or others who may not be able to communicate when they are in discomfort.

3. Carbohydrates

Starch-based thickeners will contribute the highest levels of carbohydrate to the diet. Thickening 1500ml of fluid with a starch-based thickener will provide 51-131 grams of carbohydrate per day (depending on the viscosity and the brand of thickener used). These carbohydrates will generally be distributed throughout the day, as small amounts are added to each drink and possibly pureed food as well. Be cautious, however, if someone consumes large amounts of thickened fluid (and/or pureed food) in a short space of time; for example, someone who needs assistance with eating and drinking and who only gets domiciliary carer visits four times daily.

Photo A: Milk thickened with starch-based thickener



Photo B: Milk thickened with gum-based thickener



4. Thickened milk-products

If you recommend milk (or fortified milk) to your clients, either for its nutritional value or to help them gain weight, you may want to modify this advice for clients who are on thickened fluid. I have attempted to thicken full-fat milk and fortified milk using every thickener on the market, and all starch-based thickeners give the mouthfeel of drinking curdled milk. Gum-based thickeners make the milk slightly less grainy, but I still found it borderline palatable. What seems to work the best is to make a smoothie by blending fortified milk + suitable fruit (e.g. no pips, skins or seeds) in a blender or smoothie maker. Blend until you get a smooth consistency, then add the gum-based thickener and blend for another 10 seconds. Smoothies are naturally thick and foamy and these qualities seem to mask any graininess from the gum-based thickener. Be aware that you sometimes need more thickener than what is directed on the tin to achieve the desired consistency. You may also need to let the drink sit for up to five minutes to achieve the desired consistency. For nutrition support clients who do not like thickened milk, additional calories can be obtained by adding thickener to pure fruit juice (or by using pre-thickened nutrition supplements).

5. Dehydration

Patients on thickened fluid may struggle to meet their fluid requirements.⁵⁻⁸ In fact, a patient's oral intake of thickened fluid can be as low as

455mL per day.⁵ There are a variety of reasons for this, including being offered fewer drinks,⁶ flavour suppression, satiety,⁹ unpalatability and thickened drinks taking more time and effort to consume.⁷ Two studies have found that people with dysphagia tend to get the majority of their fluid from food with a high water content (as opposed to thickened drinks).^{6,8} Thick nourishing soups, pureed fruit, yoghurt and milk-based puddings are, therefore, recommended for this population.⁸ Other strategies which may help include increasing the choice and availability of thickened drinks, staff awareness and more assistance with drinking and toileting.⁹

Table 1 summarises the directions provided by each brand of thickener. From this I have calculated the number of calories and grams of fibre and carbohydrate that each thickener provides when preparing 1500ml of fluid to stages 1, 2 and 3. It is worth noting that the instructions for how to prepare thickened drinks are not consistent from one manufacturer to the next. All companies use different scoop sizes and recommend a different number of scoops per drink. Some companies give instructions per 100ml fluid, while others give instructions per 200ml. Some companies tell you to put the thickener in the cup before the fluid, other companies recommend the reverse. Even as a healthcare professional, I found this incredibly confusing. I do wonder how carers manage if they support multiple clients in a day, especially if each client is prescribed a different thickener. It

Table 1: Thickener comparison chart

Thickener	Ingredients	Scoop size	Directions	Fibre content	Calorie content (of JUST the thickener)	Carbohydrate content (of JUST the thickener)
Multi-Thick™ (Abbott)	Modified maize starch, sulfur dioxide & sulphites.	1 scoop = 2.7 grams	Stage 1 - add 1.5 scoops to 100ml liquid Stage 2 - add 2.0 - 2.5 scoops to 100ml liquid Stage 3 - add 2.5-3.5 scoops to 100ml liquid	0 grams fibre/scoop 1500ml stage 1 fluid = 0 grams fibre 1500ml stage 2 fluid = 0 grams fibre 1500ml stage 3 fluid = 0 grams fibre	9.9 kcal/scoop 1500ml stage 1 fluid = 223kcal 1500ml stage 2 fluid = 297-371 kcal 1500ml stage 3 fluid = 371-520kcal	2.5 grams CHO/scoop 1500ml stage 1 fluid = 56 grams carbohydrate 1500ml stage 2 fluid = 75-94 grams carbohydrate 1500ml stage 3 fluid = 94-131 grams carbohydrate
Nutilis™ (Nutricia)	Maltodextrin, modified maize starch (E1442), tara gum, xanthan gum & guar gum	1 scoop = 4 grams	Stage 1 - add 2-3 scoops to 200ml liquid Stage 2 - add 3-4 scoops to 200ml liquid Stage 3 - add 4-5 scoops to 200ml liquid	0.3 grams fibre/scoop 1500ml stage 1 fluid = 4.5 - 6.8 grams fibre 1500ml stage 2 fluid = 6.8-9 grams fibre 1500ml stage 3 fluid = 9-11.3 grams fibre	14 kcal/scoop 150 ml stage 1 fluid = 210-315 kcal 1500ml stage 2 fluid = 315-420 kcal 1500ml stage 3 fluid = 420-525 kcal	3.4 grams CHO/scoop 1500ml stage 1 fluid = 51-77 grams carbohydrate 1500ml stage 2 fluid = 77-102 grams carbohydrate 1500ml stage 3 fluid = 102-128 grams carbohydrate
Nutilis™ Clear (Nutricia)	Dried glucose syrup, Xanthan gum, Guar gum	1 scoop = 3 grams	Stage 1 - add 1 scoop to 200ml liquid Stage 2 - add 2 scoops to 200ml liquid Stage 3 - add 3 scoops to 200ml liquid	0.84 grams fibre/scoop 1500ml stage 1 fluid = 6.3 grams fibre 1500ml stage 2 fluid = 12.6 grams fibre 1500ml stage 3 fluid = 18.9 grams fibre	8.7 kcal/scoop 1500ml stage 1 fluid = 65kcal 1500ml stage 2 fluid = 131kcal 1500ml stage 3 fluid = 196kcal	1.73 grams CHO/scoop 1500ml stage 1 fluid = 13 grams carbohydrate 1500ml stage 2 fluid = 26 grams carbohydrate 1500ml stage 3 fluid = 39 grams carbohydrate
Resource Thicken Up™ Clear (Nestle)	Maltodextrin (corn, potato), xanthan gum & potassium chloride	1 scoop = 1.2 grams	Stage 1 - add 1 scoop to 100ml liquid Stage 2 - add 2 scoops to 100ml liquid Stage 3 - add 3 scoops to 100ml liquid	0.3 grams fibre/scoop 1500ml stage 1 fluid = 4.5 grams fibre 1500ml stage 2 fluid = 9 grams fibre 1500ml stage 3 fluid = 13.5 grams fibre	3.7kcal/scoop 1500ml stage 1 fluid = 56kcal 1500ml stage 2 fluid = 111kcal 1500ml stage 3 fluid = 167kcal	0.7 grams CHO/scoop 1500ml stage 1 fluid = 10.5 grams carbohydrate 1500ml stage 2 fluid = 21 grams carbohydrate 1500ml stage 3 fluid = 31.5 grams carbohydrate

Thick & Easy™ (Fresenius Kabi)	Modified maize starch & maltodextrin	1 scoop = 4.5 grams	Stage 1 - add 1 scoop to 100ml liquid Stage 2 - add 1.5 scoops to 100ml liquid Stage 3 - add 2 scoops to 100ml liquid	0 grams fibre/scoop 1500ml stage 1 fluid = 0 grams fibre 1500ml stage 2 fluid = 0 grams fibre 1500ml stage 3 fluid = 0 grams fibre	16.8kcal/scoop 1500ml stage 1 fluid = 252kcal 1500ml stage 2 fluid = 378kcal 1500ml stage 3 fluid = 504kcal	4.2 grams CHO/scoop 1500ml stage 1 fluid = 63 grams carbohydrate 1500ml stage 2 fluid = 94.5 grams carbohydrate 1500ml stage 3 fluid = 126 grams carbohydrate
Thick & Easy™ Clear (Fresenius Kabi)	Maltodextrin, xanthan gum, carrageenan, erythritol	1 scoop = 1.4 grams	Stage 1 - add 1 scoop to 100ml liquid Stage 2 - add 2 scoops to 100ml liquid Stage 3 - add 3 scoops to 100ml liquid	0.4 grams fibre/scoop 1500ml stage 1 fluid = 6.5 grams fibre 1500ml stage 2 fluid = 12 grams fibre 1500ml stage 3 fluid = 18 grams fibre	4.08kcal/scoop 1500ml stage 1 fluid = 61.2kcal 1500ml stage 2 fluid = 122.4kcal 1500ml stage 3 fluid = 183.6kcal	1.2 grams CHO/scoop 1500ml stage 1 fluid = 18 grams carbohydrate 1500ml stage 2 fluid = 36 grams carbohydrate 1500ml stage 3 fluid = 54 grams carbohydrate
Thicken Aid™ (YJB Port Ltd)	Modified starch & maltodextrin	1 scoop = 4.5 grams	Stage 1 - add 1 scoop to 100ml liquid Stage 2 - add 1.5 scoops to 100ml liquid Stage 3 - add 2 scoops to 100ml liquid	0 grams fibre/scoop 1500ml stage 1 fluid = 0 grams fibre 1500ml stage 2 fluid = 0 grams fibre 1500ml stage 3 fluid = 0 grams fibre	16.8kcal/scoop 1500ml stage 1 fluid = 252kcal 1500ml stage 2 fluid = 378kcal 1500ml stage 3 fluid = 504kcal	4.2 grams CHO/scoop 1500ml stage 1 fluid = 63 grams carbohydrate 1500ml stage 2 fluid = 94.5 grams carbohydrate 1500ml stage 3 fluid = 126 grams carbohydrate

is vital that dietitians work closely with speech and language therapists to lobby the thickener companies to come up with standardised, simple and clear instructions.

CONTINUOUS 72-HOUR TRIAL: CONSUMING THICKENED FLUID

I have always sympathised with clients who need thickened fluid, but I also know that it is impossible to truly appreciate what someone is going through until you 'walk a mile in their shoes'. To really gain an understanding of my clients' experiences, I volunteered to consume thickened fluid for 72 hours (continuously). One day, I drank stage 1 (syrup consistency),

the second day was stage 2 (custard consistency) and the third day was stage 3 (pudding consistency).

How much you like something has a lot to do with whether or not it matches your expectations.¹⁰ Obviously, consuming tea with a spoon did not match my previous experience or expectations. Consequently, I found the entire situation really, really disappointing. I now totally understand why people with dysphagia tend to prefer food with a high water content (compared to thickened drinks).^{11,12} You expect certain foods to be thick and creamy, you don't expect your tea or water to be like this.



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I have experimented with almost every thickener on the market and I can honestly say that if I was put on a starch-based thickener, I would rather have a PEG.

I tried it in milk, cordial and a fizzy drink, and everything tasted so stodgy and horrid that I couldn't even drink one glass let alone meet my fluid requirements. Starch-based thickener added to milk also makes the drink look curdled - not pleasant! Gum-based thickeners were tolerable at stages 1 and 2, as long as the thickener was mixed in really well. Getting little unexpected globs of thickener in your mouth does NOT make for a pleasant surprise! It actually turned my stomach so much a few times that I couldn't finish what I was drinking.

If you have a client on thickened fluid, I urge you to consider the following:

- **Make sure all clients know that they have a choice of thickeners and that all thickeners have a slightly different taste**

So many of my clients believe that whatever they were given in hospital is the only thickener that exists. Speech and language therapists are sometimes very quick to discharge after they've made their eating and drinking recommendations, so it is often up to the dietitian to advocate on the patient's behalf to get a different (and hopefully more palatable) thickener.

- **Check how the carers are preparing thickened drinks**

Lumps and globs of unthickened thickener in a drink are an automatic turn-off. I preferred to put the drink + thickener in a blender or smoothie maker for a few seconds to achieve the most even consistency. It made the end product a bit foamy, but foamy was infinitely better than lumpy.

- **Be prepared**

When you require thickened fluid, everything has to be pre-planned. If I suddenly decided I wanted a sip of something cold, I'd have to go through the whole production of getting a glass + fluid + thickener + spoon/shaker... at which point, I generally decided it was such a hassle that I just wouldn't bother. It occurred to me that it would have been smarter to make several bottles of thickened cordial all at once and store them in the fridge. That way they would have been ready whenever I wanted them.

- **Offer mostly high-calorie thickened fluid**

Thickened drinks filled me up and made me feel a tiny bit sick. I'm not sure if this was due to the soluble fibre, the mental concentration involved in drinking thickened fluid or whether the thicker viscosity was somehow more satiating. Eating less meant that it was critical that I consumed high-calorie drinks. Fortunately, thickened pure fruit juice and thickened smoothies were my preferences (but only if they were made in a blender/smoothie maker).