Nestlé Health Science CPD Programme

Acceptance, Compliance, and Tolerance of a Novel Xanthan Gum- Based Thickener* in Oropharyngeal Dysphagia Patients.

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Abstract

Purpose.

Diet modification is an established first-line compensatory technique for dysphagia management, and thickeners are used to modify liquids. Commercial thickening agents are used to decrease the flow rate of liquids, and allow patients more time to initiate the swallow. Patients do not always like thickened fluids and so compliance can be difficult to achieve. We undertook a study to evaluate the performance of a new xanthan gum-based thickener in terms of dysphagia patient acceptance (like/dislike of overall sensory characteristics), and compliance (amount of fluid consumed vs. amount offered), and gastrointestinal (GI) tolerance (8 symptoms).

Methods.

Nursing home residents (n=19, M=74 years) with a known dysphagia participated in an open, observational study for two weeks. A speech and language therapist (SLT) monitored all participants weekly and had prescribed Stage 1, 2, or 3 fluids based on individual needs at the start of the trial. A xanthan gum-based thickener* was used to thicken the variety of liquid bases and temperatures (e.g. coffee, tea, water, milk, oral nutritional supplement) consumed daily.

Result(s).

After consuming the thickened liquids, residents indicated that they 'liked' 94% of the drinks. Between 680-900ml of fluid was received daily as thickened liquids. For 86% of the drinks, ¾ or more of the amount offered was consumed; while 67% of drinks were fully consumed. No symptoms of GI intolerance were reported.

Conclusion

- **The new xanthan gum-based thickener was liked for its sensory characteristics, one of which is the clearness of the fluids**
- **It thickened well**
- **It held its desired thickness with no GI intolerance.**

Introduction.

Increasing the bolus viscosity of liquids with the use of commercial thickening agents is regularly used as a compensatory strategy for SLTs.[1] Increasing the viscosity of fluids using commercial thickening agents decreases the flow rate, allowing patients more time to initiate a swallow and prevent or decrease aspiration during swallowing.[2] Clinical practice guidelines of premier associations recommend thickened liquids as part of early and effective management of dysphagia.[3]

The total fluid intake target for older adults is between 1500ml and 2000ml daily.[4] While both foods and liquids normally contribute to a person's total daily fluid intake, food sources contribute more to daily fluid intakes among elderly with swallowing disorders. A study demonstrated that more than 70% of water consumed with a dysphagia diet was derived from food, including purées served during the day.[5] Assuming that 70% of an older adult's daily fluid intake is from other sources like purées, 30% (or 600ml) of an individual's daily fluid target would need to come from liquid thickened with commercial thickening agents.

Inadequate fluid intakes and suboptimal compliance are frequently reported among dysphagia patients offered thickened liquids.[6] When selecting a thickener, consider its potential to optimize compliance. It is best that the intervention is not associated with iatrogenic effects (e.g. symptoms of gastrointestinal (GI) intolerance).[7] In addition, product recommendation should be suited to preference criteria for sensory characteristics such as taste, texture, and appearance.[8] A diet that includes variety has been demonstrated to encourage oral intakes[9]; thus, a patient can benefit from a product that supports use in a variety of liquid bases and temperatures.

Objective.

The acceptance, compliance, and GI tolerance of a novel xanthan gum-based thickener* was evaluated in nursing home residents who had oropharyngeal dysphagia.

Methods.

An open, observational study was conducted in line with the standards of the United Kingdom's Advisory Committee on Borderline Substances [10]. Nineteen residents from a single nursing home centre were recruited according to established inclusion and exclusion criteria (TABLE 1). All residents gave voluntary written consent before participating in the study, and were advised on their right to withdraw from the study at any time. TABLE 2 shows the age (M=74 years), gender, and medical etiology of dysphagia among the nursing home residents included in the study. All participants were under the care of a SLT and received weekly follow-up at minimum. During a 2-week study period, they received intervention with liquids thickened to their prescribed level using a novel, xanthan gum-based thickener*. Nursing and care staff recorded information (type of liquid, level of thickening, resident acceptance [like or dislike], and amount consumed) on a data collection form after each drink was consumed. In addition, data was collected on 8 symptoms of GI intolerance (diarrhoea, constipation, bloating, vomiting, nausea, burping, flatulence, and stomach pain/discomfort) on a daily basis. The amount of drinks consumed per day for each resident was determined by calculating the average daily amount from the total drinks consumed in a week. Due to an incomplete data sheet, information from one participant was omitted from the study results.

Table 1

Inclusion and exclusion critera used for recruitment

Inclusion Criteria	• Residents with dysphagia, prescribed thickened fluids. • Residents with dysphagia, under the care of a registered speech and language therapist (SLT). • Residents above the age of 18. • Residents able to tolerate ingredients in product.
Exclusion Criteria	• Residents with a normal swallow. • Residents at high risk of aspiration with oral fluids, requiring full enteral feeds. • Residents / relatives unable or unwilling to consent. • Residents with an allergy or intolerance to one or more ingredients in the product.

Table 2

Demographics of residents included in the study

Participant	Age	Gender	Medical etiology of dysphagia
1	76	m	dementia and CVA
2	52	f	Down syndrome and dementia
3	70	m	CVA
4	84	m	CVA
5	77	m	CVA and Parkinson's disease
6	91	f	dementia and CVA
7	84	f	CVA
8	44	m	ALD
9	60	f	Down syndrome
10	75	m	dementia and CVA
11	69	m	CVA
12	83	m	CVA
13	89	f	dementia and CVA
14	59	f	CVA
15	76	m	dementia
16	92	f	CVA
17	86	m	CVA
18	62	m	CVA
19	82	f	CVA

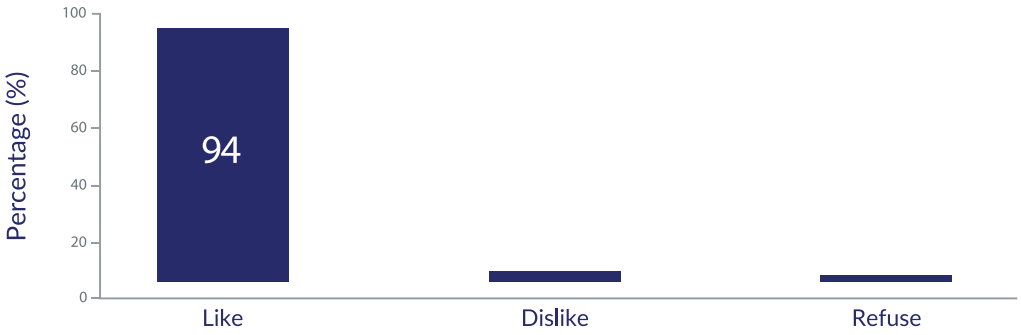
CVA = Cerebrovascular accident ALD = Adrenoleukodystrophy

Results.

A novel, xanthan gum-based thickener* was used in a variety of liquids and temperatures. Coffee or tea contributed to the majority (63%) of the served drinks. After consuming the thickened liquid, residents indicated that they ´liked´ 94% of the drinks (FIGURE 1). Between 680-900ml of fluid was received daily as thickened liquids. For 86% of the drinks, ¾ or more of the amount offered was consumed; while 67% of drinks were fully consumed (FIGURE 2). No symptoms of GI intolerance were reported.

Figure 1

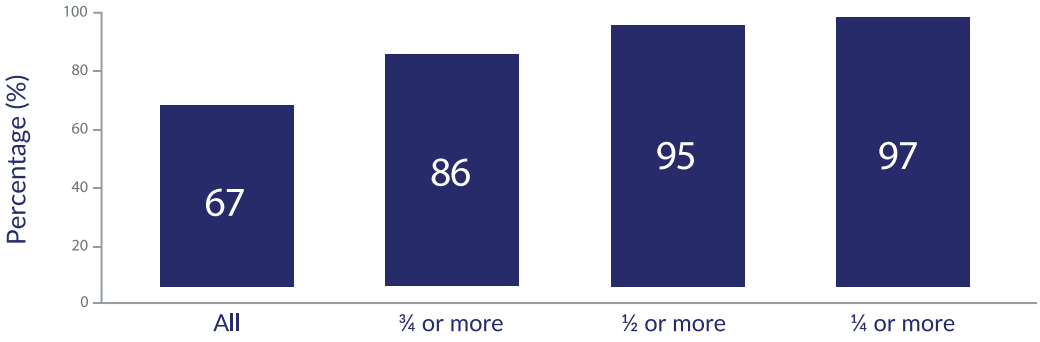
Acceptance of the various thickened beverages consumed by dysphagic residents



Patient-reported acceptance rating for each drink served.

Figure 2

Percentage of dysphagic residents consuming a designated amount or more of the thickened drinks served per day



Amount of drink consumed vs. amount offered.

Conclusion.

The novel, xanthan gum-based thickener* was suitable for use in a variety of liquids and temperatures. Liquids served at their prescribed level of thickening were well-liked by nursing home residents, and no symptoms of GI intolerance were reported. Good acceptance and compliance was based on sensory characteristics, particularly noted was the clearness of the fluids.

Limitations.

These results apply to an exclusive xanthan gum-based thickener* specifically manufactured by a patented process that allows for rapid hydration of the xanthan molecules, instantaneous stability, and dissolution without the formation of lumps. The results do not extend to other commercially available xanthan gum- based thickeners. Future studies could compare the acceptability, compliance, and GI tolerance of various commercially available xanthan gum-based thickeners.

Disclosure: Product and research support for this study was provided by Nestlé Health Science, Croydon, United Kingdom, or its affiliates.

Acknowledgements: The contributions of the nursing and care staff at MHA Care Group, Coventry, United Kingdom, helped make this research possible. Presented at the Dysphagia Research Society.

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Primary Product/Technology: *Resource® ThickenUp® Clear, Nestlé Health Science, Nestec S.A., Vevey, Switzerland.

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SEPT 2019 **DYS012**