*Proceedings of the Nutrition Society* (2018), **77 (OCE4)**, E228 doi:10.1017/S0029665118002343

*Summer Meeting, 10–12 July 2018, Getting energy balance right*

# Acceptability of chocolate-flavoured milk with reduced sucrose content in schoolchildren

B. Buczkowski, E. Smith and A. Turner
*Department of Health Professions, Manchester Metropolitan University, Manchester, M15 6BG.*

According to recent NDNS data, milk and milk products constitute main source of dietary calcium in the UK[1]. Due to sugar and fat content, the nutritional profile of flavoured milks may be unfavourable and contribute to excessive energy consumption. In contrast to sugar-sweetened beverages (SSBs), flavoured milk, is more nutrient dense and could contribute to overall improved nutrient intake in children[2,3]. Carbohydrate and Health report[4] stipulated that the daily energy intake derived from free sugars should not exceed 5 %. Sweetened milk products may be outside of the initial focus of food industry in reformulation, as these products are not covered by the soft drink levy[5]. Nevertheless, in response to the Government's plan, action is required to address the excessive free sugar consumption in children whilst improving intakes of other nutrients. The aim of the current study was to analyse school children's acceptability of chocolate-flavoured milk (CFM) with a reduced sucrose content. A control CFM was developed using a leading supermarket's own brand chocolate-flavoured milk as benchmark. In subsequent trials, sucrose content was reduced by 30, 40 and 100 %.

The acceptability of the CFM samples was tested using a previously validated 7-point facial hedonic scale[6] in a group of 56 schoolchildren (4–10 years old) recruited through a school in Greater Manchester. Control CFM, CFM with sucrose content reduced by 30 % (A), CFM with sucrose content reduced by 40 % (B), and CFM with sucrose content reduced by 100 %(C) were provided to children. Children were asked to score each of the samples from 'super bad' to 'super good.' The study obtained the approval of the research ethics committee at Manchester Metropolitan University. Informed parental consent was gained.

| | Acceptability | |
|---|---|---|
| | Mean | SD |
| Control CFM | 6·11 | 1·33 |
| A | 6·70[a,b] | 0·60 |
| B | 6·04[a] | 1·28 |
| C | 5·88[b] | 1·48 |

Values sharing a superscript are significantly different (ANOVA, followed by Tukey's test, $p \leqslant 0{\cdot}05$).

ANOVA of the results revealed a statistically significant difference between the acceptability of samples of varying sucrose and sweetener content ($p = 0{\cdot}003$). *Post-hoc* multiple comparisons (Tukey's test) revealed statistically significant differences between samples A and B ($p = 0{\cdot}023$) and A and C ($p = 0{\cdot}003$). The difference between Control CFM and A was not statistically significant ($p = 0{\cdot}054$). CFM with sucrose content reduced by 30 % had the highest mean acceptability score (6·7) and lowest standard deviation (0·6). In conclusion, CFM with sucrose content reduced by 30 % was the most acceptable to schoolchildren in this study. Further work is required to elucidate the sensory profile and to improve the acceptability of versions of CFM with lower sucrose content. The findings of this study have the potential to underpin policy relating to industry action on lowering sugar content.

1. Bates B, Cox L, Nicholson S *et al.* (2016) National Diet and Nutrition Survey: results from years 5 and 6 (combined) of the Rolling Programme (2011/2012–2013/2014). London. Public Health England.
2. Murphy MM (2008) *J Am Diet Assoc* **108**, 631–9.
3. Nicklas TA, O'Neil CE & Fulgoni VL (2013) *J Sch Health* **83**, 728–33.
4. Scientific Advisory Committee on Nutrition (2015) *Carbohydrates and Health*, London: HMSO.
5. HM Government (2016) *Childhood Obesity: A Plan for Action*, London: Department of Health.
6. Chen AW, Resurreccion AVA & Paguio LP (1996) *J Sens Stud* **11**, 141–63.