

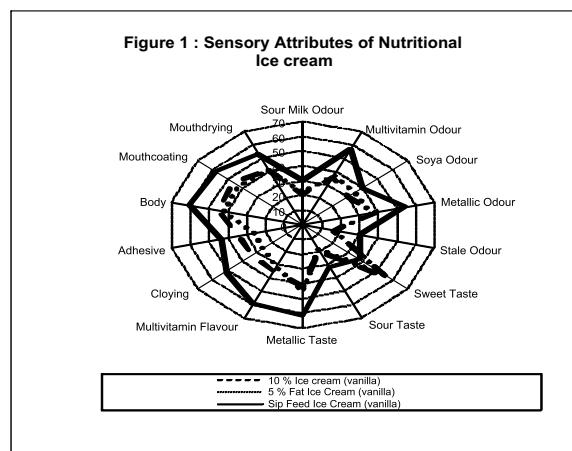
Sensory profile and patient liking of nutritional-supplement ice cream manufactured to varying energy density

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Previous studies found serving temperature to affect the acceptability of oral nutritional supplements (ONS)⁽¹⁾. However, air incorporated into ONS in order to produce ice cream unacceptably increased consumption volume⁽²⁾. The present study aimed to manufacture ice cream of higher energy, mineral and vitamin composition by weight in order to achieve the same energy content by volume as an ONS drink (628 kJ (150 kcal)/100 ml).

Ice cream was manufactured from three formulations, containing (w/w) 20% fat (837 kJ (200 kcal)/100 ml), 10% fat (607 kJ (145 kcal)/100 ml) or 95% commercial ONS (401 kJ (96 kcal)/100 ml). The ice cream was evaluated by a trained analytical sensory panel (*n* 12) using quantitative descriptive profiling and after appropriate ethics approval by patients (*n* 24, mean age 84 years) at the Royal Berkshire NHS Foundation Trust, who scored liking using a nine-point hedonic scale.



Ice cream sample	Mean liking (1, dislike extremely; 9, like extremely)
ONS	5.0 ^a
10% fat	6.3 ^b
20% fat	5.7 ^{a,b}

^{a,b}Mean values with unlike superscript letters were significantly different (Nemenyi's procedure for non-parametric data; *P* < 0.05).

Sensory profiling found that thirty attributes differed significantly (*P* < 0.05) between the samples. High-fat ice creams were lower in many odours, tastes (except sweet), flavours and mouth-feel attributes compared with ONS ice cream (Figure) and lower in eight after tastes. Patients mean liking differed significantly (*P* = 0.03); ONS ice cream was liked least and the 10% fat ice cream was liked the most.

Test ice creams had higher energy density than ONS ice cream, ensuring a more acceptable consumption volume. They had less negative sensory attributes and were preferred by patients to the ONS ice cream. It is recommended that a high-fat, mineral and vitamin-supplemented ice cream should be manufactured commercially.

- Nolan A (1999) *J Hum Nutr Diet* 12, 453–458.
- Methven L, Kennedy OB, Mottram DS *et al.* (2009) *Proc Nut Soc* 68, E37.