

A comparison of commercially available, formula-based very low calorie diets (VLCDs) for use as total dietary replacement (TDR) during weight loss



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Introduction

Very low calorie diets (VLCD) (<800kcal/d) have been available for use in the UK for about 30 years.

There is renewed interest in the use of formula-based weight loss products due to promising preliminary data¹ which describes their role in facilitating the often necessary weight loss required to ameliorate both the pre-diabetic and type 2 diabetic state.

In addition, there is accumulating evidence with regards to their efficacy during partial use for prevention of regain after weight loss². Developed to create a near-fasting metabolic response without nutrient depletion, such products have become an integral part of some commercial weight loss providers programmes.

However, whilst there are compositional criteria which should be met so that neither the nutritional status nor general health of those on a VLCD are compromised, there are currently no published data investigating the nutritional make-up of the different VLCDs available within the UK and whether or not they meet suggested minimum standards.

Aim

To compare the nutritional composition data for a range of different commercially available VLCDs for use in total dietary replacement, all of which were available for purchase within the UK during Oct/Nov 2014. We assessed whether these VLCDs met with 'CODEX Standard for Formula Foods for use in very low energy diets for weight reduction' (CODEX STAN 203-1995)³.

Method

Eleven companies were included in this comparison including LighterLife UK Ltd and ten others, chosen on the basis of an internet search for UK VLCD providers. Nutrient information was obtained using values given on-pack. Where this was not provided, information was gathered from individual company websites where available. The combinations of products chosen to represent one day of TDR using a VLCD were intended to reflect the types of products that can be consumed during TDR (shakes, textured meals, soups and bars) and were selected on the basis that they were available for purchase during Oct/Nov 2014.

The composition of these daily VLCDs were assessed and compared with the minimum daily requirements of essential nutrients which represent the sole source of energy intake as described in Codex Stan 203-1995.

Results

The daily nutrient contents of a VLCD as described in Codex Stan 203-1995 should provide: 450-800kcal; \geq 50g protein with a PDCAAS score of 1; \geq 50g of available carbohydrates; \geq 3g of linoleic acid and <0.5g of α -linolenic acid (with a ratio of between 5-15); 100% of the RIs for vitamins and minerals. Three providers (27%) failed to meet the minimum daily requirements (MDR) for protein and eight (73%) failed to meet the MDR for at least one micronutrient, with several failing to provide the MDR for more than one.

	LighterLife	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
Energy (450-800kcal)	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS	PASS
Carbohydrates (>50g)	PASS	PASS	PASS	FAIL	PASS	PASS	PASS	PASS	FAIL	PASS	PASS
Protein (>50g)	PASS	FAIL	PASS	PASS	PASS	PASS	PASS	FAIL	PASS	FAIL	PASS
Micronutrients	PASS	FAIL	FAIL	PASS	PASS	FAIL	FAIL	FAIL	FAIL	FAIL	FAIL
Meets labelling requirements	PASS	PASS	PASS	FAIL	FAIL	FAIL	FAIL	FAIL	PASS	FAIL	FAIL

Table 1: Compliance of VLCD providers with CODEX Standard 203-1995

Of particular note is that 64% of the providers failed to include adequate nutrition information on either the packaging or the website. In many cases, the content was neither complete nor presented very clearly.

An assessment of the provision of essential fatty acids was not possible due to lack of information.

Conclusion

Many commercially produced VLCDs do not meet the MDR of essential nutrients as described in Codex, nor do they provide adequate nutritional information for consumers. Provision of adequate nutrition whilst on a VLCD is vital to ensure good health during weight loss. LighterLife complies fully with Codex Stan 203-1995 and also provides complete transparency of compositional information.

This is an important consideration for individuals or Health Care professionals who are considering the use of VLCDs to facilitate weight loss.

References: 1) Lim et al.(2011). Reversal of type 2 diabetes: normalisation of beta cell function in association with decreased pancreas and liver triacylglycerol. *Diabetologia*, 54:2506-2514; 2) Johansson K et al.(2013). Effects of anti-obesity drugs, diet and exercise on weight-loss maintenance after a very-low-calorie diet or low-calorie diet: a systematic review and meta-analysis of randomized controlled trials. *Am J Clin Nutr* doi: 10.3945/ajcn.113.070052; 3) Codex Stan 203-1995. Codex standard for formula foods for use in very low energy diets for weight reduction. <http://www.codexalimentarius.org/>.