

VLCD COMPLIANCE AND LEAN BODY MASS

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Very low calorie diets (VLCD) have many advantages, as they are inexpensive, safe and easy to comply with, and give rapid and encouraging weight loss. On the other hand, many patients complain of hunger and constipation. We have shown that these drawbacks can be reduced by the supplementation of 30 g of dietary fibre to VLCD. By the use of a VLCD which provides ~60 g of protein for women and ~70 g for men, the dietary regimen is safe and no excessive loss of lean body mass seems to occur during VLCD in obese patients. However, the changes in body composition that may occur after cycles of weight loss and regain have not been clarified. After weight cycles with weight losses obtained by conventional diets, obese women have lower lean body mass than obese non-dieting controls. Hence, more information about the changes in body composition during dieting on conventional diets and VLCD are needed.

Introduction

Not all doctors recognize that the modern versions of very low calorie diets fulfil all the conditions usually required for pharmacological treatment of medical diseases: effectiveness, safety, simplicity, and amelioration of morbidity and mortality. However, all agree on their effectiveness and simplicity. The safety of VLCD is still disputed by some¹, although most experts regard the VLCDs with high levels of protein of a good biological value as being safe^{2,3}. It has also been shown that VLCD decreases morbidity, i.e. diabetes, hypertension, hyperlipidemia, etc., whereas a favourable effect on mortality has never been described. However, this lack of evidence is not restricted to VLCD but may be common for all treatments of obesity.

Compliance during VLCD

The large weight loss promotes good compliance and *vice versa*. In addition, other advantages of VLCD improve compliance and thus weight loss as compared to conventional diets (Table 1). The low cost of VLCD contrasts the expensive components of conventional diets, such as lean meat, fish and vegetables. In Denmark, the daily cost of the most popular VLCD brand is about US\$3.

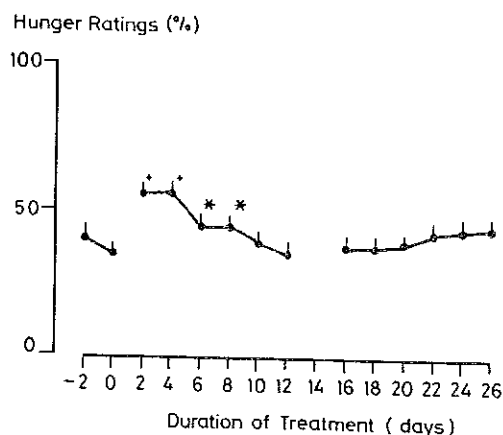


Fig. 1. Hunger ratings assessed by visual analogue scores in 15 obese subjects during habitual diet and on 26 days of VLCD. Values are means + s.e. Symbols for significant difference compared to habitual diet on baseline: * $P < 0.05$, and † $P < 0.01$.

some unknown long term impacts on colonic and gallbladder function³. Interestingly, we found a significant effect of fibre supplementation on the number of daily bowel movements. Bowel movements decreased from 1.9 per day on habitual diet to 0.7 per day on VLCD without fibre, but was increased to 1.0 per day by fibre supplement. Fibre had no effect on satiety, consistency of stools or flatulence. As dietary fibre may reduce the bioavailability of important divalent cations, the plasma concentration of calcium, iron and magnesium was followed during the study. However, fibre supplementation had no effects on these variables, nor did it improve the beneficial effect of VLCD on plasma glucose, cholesterol or triglyceride.

In conclusion, compliance may be increased during treatment with VLCD by supplementation of 30 g of dietary fibre, without impairment of absorption of divalent cations.

Conservation of lean body mass

It has been repeatedly claimed that excessive loss of lean body mass during VLCD makes this dietary regimen dangerous, slows down resting energy expenditure (REE) and makes body composition fatter during the so-called yo-yo dieting. However, the evidence for the existence of this phenomenon is not convincing.

It is important to bear in mind that the overweight in obese patients consists of ~75 percent fat and ~25 lean body mass (non-fat)¹. As the excessive lean body mass will be lost, the need to achieve nitrogen balance during weight reduction is not reasonable. Obviously, the liquid dietary regimens of hydrolyzed collagen, which were promoted in the United States 15 years ago, caused several deaths as a consequence of the very low biological value of the protein and inadequate supplementation of vitamins and minerals. However, there is compelling evidence showing that a diet containing >55 g of proteins of good biological value for women and >70 g for men, supplemented with vitamins, minerals and trace

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