



## Assessment of Very Low Calorie Diets

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### Authors' contributions

*This work was carried out in collaboration among all authors. The opinion has been assessed and approved by the Panel on Food Additives, Flavourings, Processing Aids, Materials in Contact with Food and Cosmetics of the Norwegian Scientific Committee for Food Safety. All authors read and approved the final manuscript.*

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Grey Literature

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### ABSTRACT

Very low calorie diets (VLCD products) are formulated products with 450 – 800 kcal per day intended to replace the whole diet. Regulation of VLCD is not harmonised in the EU, and there is no specific national Norwegian legislation for these products. The Norwegian Food Safety Authority has requested VKM to propose minimum and maximum limits for the content of fat/ fatty acids, protein, carbohydrates, vitamins and minerals in VLCD products based on acknowledged scientific documentation. VKM is also asked to evaluate if VLCD products are suitable in the treatment of obese subjects with type 2 diabetes, and possible contraindications for use of VLCD.

This assessment is based upon the SCOOP-report "Collection of data on products intended for use in very-low-calorie-diets" (SCOOP, 2002) and new literature mainly after 2002.

Based on the available scientific literature, the VKM Panel on nutrition, dietetic products novel food and allergy has concluded that, on a daily basis, VLCD products should provide minimum 55 g carbohydrates, 10 g fibres, 50 g high quality protein and 7 g fat, including 3 g from linoleic acid and 0.5 g from  $\alpha$ -linolenic acid. The amino acid scoring pattern should be in accordance with the protein-digestibility-corrected amino acid score.

VLCD products should provide minimum 10  $\mu$ g vitamin D per day, and the minimum recommended daily intake for the other vitamins and minerals.

No maximum limits are suggested for carbohydrates, protein or fat, as the energy will be the limiting factor. The fibre content should not exceed 30 g per day, and the VKM Panel recommends that the maximum limits for vitamins, minerals and trace elements should equal two times the recommended daily intake.

VLCD will give short-term weight loss and improvement in blood pressure, serum lipids and glycemia in obese subjects with type 2 diabetes, and no serious adverse effects have been reported. VLCD may impede the educational process needed in the treatment of diabetes, and should therefore only be used as part of an educational program in obese subjects with type 2 diabetes, and only under medical supervision.

VLCD is contraindicated in children, adolescents, pregnant and lactating women, elderly (above 65 years old) and in subjects with heart failure, cerebrovascular disease, gallstone disease, kidney- and liver diseases, psychiatric disorders, and in subjects with BMI  $\leq$  30 kg/m<sup>2</sup>. In addition one should be aware of the reducing effect of VLCD on blood pressure and the effect on hyperglycaemia which may cause problems if pharmacological therapies for these conditions are given. Medical supervision is recommended if VLCD treatment exceeds 3 weeks.

To prepare this report, VKM established an ad hoc group (members listed above). The VKM Panel on Nutrition, Dietetic Products, Novel Food and Allergy has discussed and adopted this opinion.

*Keywords: VKM; assessment; Norwegian Scientific Committee for Food Safety; calorie diets.*

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**NOTE:**

This work was carried out in collaboration between all authors. The opinion has been assessed and approved by the Panel on Nutrition, Dietetic Products, Novel Food and Allergy of VKM. All authors read and approved the final manuscript.

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## **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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