Vitamin D protects against diet-induced obesity by enhancing fatty acid oxidation.


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OBJECTIVE: Prospective studies reported an inverse correlation between 25-hydroxyvitamin D [25(OH)D] plasma levels and prevalence of obesity and type 2 diabetes. In addition, 25(OH)D status may be a determinant of obesity onset. However, the causality between these observations is not yet established.

METHODS: We studied the preventive effect of vitamin D3 (VD3) supplementation (15,000IU/kg of food for 10 weeks) on onset of obesity in a diet-induced obesity mouse model.

RESULTS: We showed that the VD3 supplementation limited weight gain induced by high-fat diet, which paralleled with an improvement of glucose homeostasis. The limitation of weight gain could further be explained by an increased lipid oxidation, possibly due to an up-regulation of genes involved in fatty acid oxidation and mitochondrial metabolism, leading to increased energy expenditure.

CONCLUSION: Altogether, these data show that VD3 regulates energy expenditure and suggest that VD3 supplementation may represent a strategy of preventive nutrition to fight the onset of obesity and associated metabolic disorders.

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