

Involvement of dietary saturated fats, from all sources or of dairy origin only, in insulin resistance and type 2 diabetes

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Reducing the consumption of saturated fatty acids to a level as low as possible is a European public health recommendation to reduce the risk of cardiovascular disease. The association between dietary intake of saturated fatty acids and development and management of type 2 diabetes mellitus (T2DM), however, is a matter of debate. A literature search was performed to identify prospective studies and clinical trials in humans that explored the association between dietary intake of saturated fatty acids and risk of insulin resistance and T2DM. Furthermore, to assess whether specific foods, and not just the saturated fatty acid content of the food matrix, can have differential effects on human health, the relationship between consumption of full-fat dairy products, a main source of dietary saturated fatty acids, and risk of insulin resistance and T2DM was studied. There is no evidence that dietary saturated fatty acids from varied food sources affect the risk of insulin resistance or T2DM, nor is intake of full-fat dairy products associated with this risk. These findings strongly suggest that future studies on the effects of dietary saturated fatty acids should take into account the complexity of the food matrix. Furthermore, communication on saturated fats and their health effects should be prudent and well informed.

INTRODUCTION

Excess energy intake and positive energy balance are associated with the development of obesity and insulin resistance, which are key features in the pathophysiology of type 2 diabetes (T2DM).¹ Excess intake of dietary macronutrients may be an important risk factor in the development of obesity and insulin resistance, as high intakes of fat and sugar may contribute to excess energy intake.² Furthermore, the involvement of different types of dietary fat is a matter of scientific and clinical debate. In vitro experimental data have demonstrated that saturated fatty acids, especially the 16-carbon palmitate,

induce insulin resistance.³ The recent report from Food and Agriculture Organization (FAO) of the United Nations concluded that saturated fat might be associated with an increased risk of T2DM.⁴ However, review of the current published literature indicates the need to re-evaluate this conclusion,⁵ particularly within the context of a diet in which saturated fat is replaced by other macronutrients. For example, several clinical trials and meta-analyses have demonstrated that replacing dietary fat with refined carbohydrates could decrease insulin sensitivity in healthy, overweight, or diabetic (T2DM) individuals.^{6–9} Furthermore, Forsythe et al.¹⁰ found that low-carbohydrate diets high in saturated

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