

Plate model for obese: the impact of lipids on energy density of foods in Brazilian meals

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Key Words: Plate Model, Obesity, High Density Foods, Hypocaloric Diet, Food Exchange Meals, Nutrition Education
Descritores: Prato Modelo, Obesidade, Alimentos Alta Densidade, Dieta Hipocalórica, Educação Nutricional

Resumo

Dentre os fatores etiológicos da obesidade destaca-se o consumo de alimentos de alta densidade energética. Embora existam inúmeros guias nutricionais objetivando orientar os indivíduos quanto às suas escolhas alimentares, nenhum deles dispõe de ferramentas que ilustrem o impacto dos lipídios na densidade energética dos alimentos e consequentemente sobre o tratamento dietético da obesidade, por falharem em não permitir a visualização entre a dieta indicada na teoria e sua execução prática. No presente trabalho propõe-se uma adaptação do guia Modelo do Prato, utilizando-se do sistema de equivalentes dietéticos, a fim de se evidenciar o papel dos lipídios na densidade energética das refeições. Para tal, elaborou-se refeições com alimentos usuais da dieta brasileira e partir destas 3 dietas padrão, denominadas: Dieta A (normocalórica - 2435 Kcals); Dieta B (proposta de dieta hipocalórica - 1210 Kcals), contendo 60% de carboidratos, 15% de proteínas e 25% de lipídios e uma terceira dieta, Dieta C, com a mesma proposta da dieta B, porém com a adição de alguns alimentos ricos em gordura. Estas dietas tiveram suas refeições componentes fotografadas e comparadas quanto ao seu conteúdo energético, permitindo a visualização de que apesar das dietas B e C terem volumes similares, os incrementos lipídicos tornaram o valor energético da dieta C similar ao da Dieta A, que não tinha proposta hipocalórica, o que poderia justificar ao paciente a sua dificuldade em obter sucesso no emagrecimento. Assim, obteve-se um método diferencial para educação nutricional de pacientes com excesso de peso que auxilie na identificação das falhas cometidas durante o tratamento dietético e que impedem os progressos no tratamento nutricional. **Endocrinol. diabetes clín exp 2004; 4: 258 - 265**

Abstract

One of the factors related to the etiology of obesity that can be emphasized is the intake of high density foods. Although there are a lot of nutritional guides, there are not specific tools that allow the visualization of the impact of lipids on energy density of foods by the patients, in order to increase the connection among the diet in the theory and the practice. We proposed a plate model adaptation, considering the equivalent system to put in evidence the visualization of fat role in energy density of meals. We elaborated a menu with natural Brazilian foodstuff, considering three options: Diet A (normocaloric - 2435 Kcals), Diet B (hypocaloric - 1210 Kcal) both of them with 60% carbohydrates, 15% proteins, 25% fat and Diet C (Diet B plus additional fat servings). We took pictures of each meal and compared the energy content of these three diets emphasizing the increasing of energy of Diet C when lipids were added. Despite of the volume of Diet C servings remains

visually quite the same of Diet B, the proposed energy value that was originally 1210 Kcal reached 2445 Kcal (the same of Diet A, which has twice more volume than Diet B) when more fat were added to the Diet B recipes. Adapting the plate model, we obtained a complementary visual tool to teach obese patient about the role of fat on energy density of foods. **Endocrinol. diabetes clín exp 2004; 4: 258 - 265**

INTRODUCTION

Obesity is one of the most serious problems of public health and it could be considered a world phenomenon. Its prevalence is growing not only in developed countries but also in countries that recently had only malnutrition related to poverty and subnutrition as a concern¹.

Besides larger risks of hypertension, dyslipidemia, diabetes *mellitus*, osteopathies and so on; it should be concerned the life condition of obese subjects, considering the social discrimination and their frustrated attempts of weight loss that leads to treatment abandon and involved health professionals discourage.

It can be considered that, sedentary imposed by industrialization and endogenous factors, changes in the diet composition with substitution of the whole cereals for refined and, mainly increase in the fat consumption have been related with this obesity epidemic^{1,2,3}.

Among the factors mentioned above, it is important to emphasize the role of dietary fat in the development of obesity, since studies and epidemic evidences suggest a direct relationship between the amount of consumed fat and the obesity degree⁴. Although there is discussion about the true cause for overfeed and weight gain, there are countless physiologic and sensorial mechanisms that explain, in spite of the energy density of foods be an important etiologic factor,^{5,6} dietary fat is the decisive factor,⁷ as it will be discussed here.

The fat properties that direct or indirectly lead to the obesity are: (a) palatability and less chewing required becoming the feeding more enjoyable, easily driving to the overfeed; (b) high energy density favoring higher energy intake in small volumes of foods, promoting lower gastric distention, an important factor for inhibition of the intake; (c) tendency of the fat for storing calories by the organism instead of being priority oxidized as the carbohydrates, contributing to increase fatty deposits⁴; (d) leptin efficiency impaired, an important hormone that induces the satiety and regulates the fatty mass, that develops key role on the alimentary consumption regulation and lowered energy expenditure,⁸ then, high-fat-diets increase hunger sensation and decreasing energy expenditure^{9,10}. Besides that, it can be considered as a further difficulty, the fact that obese individuals or with tendency to it seem to have preference for fatty foods,¹¹ responding not only with smaller intensity to the satiety signals generated by the fat, that are not sufficiently strong or precocious to prevent hyperphagia, but also tends more to store the fat excess when compared with thin individuals².

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