LETTER TO THE EDITOR





Exercise training alters the glycemic response to carbohydrate and is an important consideration when evaluating dietary carbohydrate intake

Charles Paul Lambert

Abstract

Carbohydrates raise insulin concentrations in blood. Exercise decreases the insulin response to carbohydrate infusion and is beneficial in reducing postprandial glucose and insulin concentrations. This is important as there has been recent information suggesting postprandial insulin concentrations are linked to obesity (Carbohydrate-Insulin Model of Obesity). The validity of this model may be in question in face of chronic exercise.

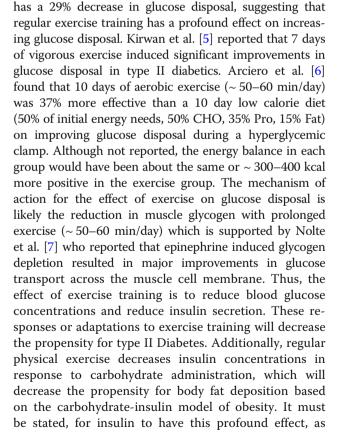
Keywords: Exercise, Insulin, Glycemic response carbohydrate

Main text

Recently, the glycemic index of carbohydrate containing foods has received much attention due to the carbohydrate-insulin model of obesity, which has some supporting evidence [1]. The hypothesis of the carbohydrate-insulin model of obesity is that a high glycemic index carbohydrate intake will increase insulin concentrations and therefore increase body fat deposition. Whether or not this is true is still a matter of scientific inquiry. Clearly, an important intervention to reduce the glycemic index of carbohydrate containing foods and greatly reduce the deleterious effects of the carbohydrate-insulin model of obesity is physical exercise [2]. King et al. [2] reported that when the plasma glucose was raised to approximately 450 mg/dl by glucose infusion there was a 64% reduction in insulin secretion in aerobically exercise trained men than in non-aerobically exercise trained men. Interestingly, only 1 week of aerobic exercise training in non-insulin dependent diabetics resulted in a 32% reduction in the area under the insulin curve in response to 100 g of glucose [3]. With regard to glucose disposal, Vukovich et al. [4], showed that endurance runners who quit running for 6 days

Correspondence: charles.lambert@sctoday.edu

Stautzenberger College, 1796 Indian Wood Circle, Maumee, OH 43537, USA



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stated in the Carbohydrate-Insulin Model of Obesity, individuals must be in positive energy (caloric) balance as stated by the 1st Law of Thermodynamics (energy can neither be created or destroyed but only changes forms); unless hormones such as insulin alter the 1st Law of Thermodynamics. Thus, the effect of exercise training must be taken into consideration in any discussion of glycemic index of carbohydrate containing foods and in reducing the rise in blood glucose due to a large carbohydrate load and of the potential impact of the glucose-insulin model of obesity in body fat deposition. Additionally, the importance of physical exercise in prevention of insulin resistance through muscle glycogen degradation and/or Glut-4 translocation cannot be underestimated. As a result, physical exercise should be a part of each individual's weekly regimen as it reduces blood glucose and insulin secretion.

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Author's contributions

CPL is solely responsible for the content of this manuscript. The author read and approved the final manuscript.

Ethics approval and consent to participate

None.

Consent for publication

Dr. Charles P. Lambert consented to this manuscript being published.

Competing interests

The author declares that has no competing interests.

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