

## A rat model for determining the postprandial response to foods

Rat model for determining postprandial food response

Damien P. Belobrajdic,<sup>1</sup> Jiangqin Wei<sup>1</sup> and Anthony R. Bird.<sup>1</sup>

<sup>1</sup> CSIRO Health and Biosecurity, Kintore Ave, Adelaide SA, Australia, 5000

Corresponding author: Damien Paul Belobrajdic, Email:

damien.belobrajdic@csiro.au

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1002/jsfa.7896

**Abstract**

**BACKGROUND:** The use of small animal models for studying postprandial changes in circulating nutrients, hormones and metabolic biomarkers is hampered by the limited quantity of blood that can be withdrawn for analysis. Here we describe the development of an unrestrained, meal-fed rat model, having a permanent or temporary vascular cannula that permits repeated blood sampling. The applicability and performance of the model was evaluated in a series of experiments on acute glycemic and insulinemic responses to carbohydrate-based test meals.

**RESULTS:** A test food containing 0.4 g carbohydrate raised blood glucose by 1.5 mM. Postprandial blood glucose levels peaked at 15 min and returned to baseline at 180 min whereas they remained elevated for longer when the test meal contained 1.25 g carbohydrate. The glycemic response tended ( $P=0.063$ ) to be higher when the meal tolerance test was conducted at the start rather than the end of the dark period but the insulinemic response was unaffected. The magnitude of the glycemic response was less for blood collected from the caudal vein compared to that from the jugular vein. Both cannulation strategies were equally effective in enabling return of red blood cells, thus preserving blood volume.

**CONCLUSION:** This improved small animal model affords new opportunities to screen foods for nutrient bioavailability and explore metabolic mechanisms mediating responses to food consumption.

**Keywords:** rat, postprandial, meal response, glucose, bioavailability

Download English Version:

<https://daneshyari.com/en/article/7399201>

Download Persian Version:

<https://daneshyari.com/article/7399201>

[Daneshyari.com](https://daneshyari.com)