



## Australian native grain reduces blood glucose response and Glycemic Index

T. Pour<sup>1</sup>, H. Binge<sup>2</sup>, R. Cross<sup>3</sup>, K. Moore<sup>3</sup>, A. Pattison<sup>2</sup>, J. Brand-Miller<sup>4</sup>, F. Atkinson<sup>4</sup> and K. Bell-Anderson<sup>4</sup>

<sup>1</sup>University of Lubeck, Germany

<sup>2</sup>Plant Breeding Institute, Faculty of Science, University of Sydney, 2006, Australia

<sup>3</sup>School of Geosciences, Faculty of Science, University of Sydney, 2006, Australia

<sup>4</sup>Charles Perkins Centre, Faculty of Science, University of Sydney, 2006, Australia

Australian Aboriginal and Torres Strait Islander peoples are disproportionately affected by diet-related disease such as type 2 diabetes, the rate of which is 20 fold higher than that of non-Indigenous young Australians<sup>(1)</sup>. Before colonisation, Gomeroi and other First Nations people harvested, threshed and ground native grass seeds with water into a paste before cooking<sup>(2)</sup>. The introduction of white refined flour has meant that time-consuming grass seed processing has mainly ceased, and native grains are no longer eaten habitually. The aim of this study was to determine the effect of 10% incorporation of two native grain flours on postprandial blood glucose response and Glycemic Index (GI). Five male and five female subjects, with a mean age of  $30 \pm 0.9$  and BMI of  $21.6 \pm 0.4$  and normoglycemic, participated in GI testing of three flour + water pancake compositions matched for available carbohydrate: 100% wheat (Wheat) and 90% wheat:10% native grains (Native\_a and Native\_b). Effect on satiety was determined using subjective ratings of hunger/fullness over the time course of the GI testing. In comparison to the plain flour pancake, replacing 10% plain wheat flour with Native\_b flour significantly reduced the GI by 28.8% from  $73 \pm 5$  to  $48 \pm 5$ , having a profound effect on postprandial blood glucose levels in 9 of 10 subjects ( $p < 0.05$ , paired t-test). The GI of 10% Native\_a flour pancake was not different from 100% wheat flour pancake ( $75 \pm 5$ ). Satiety tended to be greater when native grains were incorporated but this study was not powered to detect effect on satiety. In conclusion, replacing only 10% of plain wheat flour with Native\_b flour was sufficient to significantly reduce the blood glycemic response to the pancake. This replacement could be easily implemented for prevention and treatment of type 2 diabetes. For Aboriginal people with access to grain Country, the nutritional health benefits associated with eating native grains, as well as the cultural benefits of caring for Country, will have a direct transformational impact on local communities. Our vision is to revitalise Gomeroi grains and to guide a sustainable Indigenous-led industry to heal Country and people through co-designed research.

**Keywords:** native grains; type 2 diabetes; Glycemic Index; satiety

### Ethics Declaration

Yes

### Financial Support

This work was supported by a philanthropic gift from Jackie Vidor.

### References

1. Haynes A, Kalic R, Cooper M *et al.* (2016) *MJA* **204**: 303–303.
2. Pattison A, McGee K, Birch J *et al.* (2023) *JEthnobiol* accepted