



MEDIA RELEASE

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Millet-based diet can lower risk of type 2 diabetes and help manage blood glucose levels

A new study has shown that eating millets can reduce the risk of developing type 2 diabetes and helps manage blood glucose levels in people with diabetes, indicating the potential to design appropriate meals with millets for diabetic and pre-diabetic people as well as for non-diabetic people as a preventive approach.

Drawing on research from 11 countries, the study published in *Frontiers in Nutrition* shows that diabetic people who consumed millet as part of their daily diet saw their blood glucose levels drop 12-15% (fasting and post-meal), and blood glucose levels went from diabetic to pre-diabetes levels. The HbA1c (blood glucose bound to hemoglobin) levels lowered on average 17% for pre-diabetic individuals, and the levels went from pre-diabetic to normal status. These findings affirm that eating millets can lead to a better glycemic response.

The authors reviewed 80 published studies on humans of which 65 were eligible for a meta-analysis involving about 1,000 human subjects, making this analysis the largest systematic review on the topic to date.

“No one knew there were so many scientific studies undertaken on millets’ effect on diabetes and these benefits were often contested. This systematic review of the studies published in scientific journals has proven that millets can keep blood glucose levels in control and reduce the risk of diabetes. It has also shown just how well these smart foods do it,” said Dr. S Anitha, the study’s lead author and a Senior Nutrition Scientist at ICRISAT.

Millets, including sorghum, were consumed as staple cereals in many parts of the world until half a century ago. Investments in a few crops such as rice, wheat and maize, have edged nutritious and climate-smart crops like millets out of the plate.

“Awareness of this ancient grain is just starting to spread globally, and our review shows millets having a promising role in managing and preventing type two diabetes. In the largest review and analysis of research into different types of millet compared to other grains such as refined rice, maize and wheat we found that millets outperform their comparison crops with lower GI and lower blood glucose levels in participants,” observed Professor Ian Givens, a co-author of the study and Director at University of Reading’s Institute of Food, Nutrition and Health (IFNH) in the UK.

Diabetes is increasing in all regions of the world. Diabetes Australia notes that diabetes is the biggest challenge confronting Australia’s health system with 280 Australians developing diabetes every day.

Strengthening the case for reintroducing millets as staples, the study found that millets have a low average glycemic index (GI) of 52.7, about 36% lower GI than milled rice and refined wheat, and about 14-37 GI points lower compared to maize.

All 11 types of millets studied could be defined as either low (<55) or medium (55-69) GI, with the GI as an indicator of how much and how soon a food increases blood sugar level. The review concluded that even after boiling, baking and steaming (most common ways of cooking grains) millets had lower GI than rice, wheat and maize.

“Millets, including sorghum, have many advantages for Australia, being an option for farmers during a climate crisis as they are very hardy and able to grow in high temperatures with minimal water. There are many opportunities to develop a wide range of consumer products with millets, ranging from pancake mix to soups, energy bars, breakfast cereals, health shakes and more. This could be a triple win for the farmers, industry and consumers if promoted,” advocated Ms. Joanna Kane-Potaka, a co-author of the study and an Australian who has spent the last nine years in India. Ms. Kane-Potaka is ICRISAT’s Assistant Director General and leads the Smart Food initiative.

The study also identified information gaps and highlighted a need for collaborations to have one major diabetes study covering all types of millets and all major ways of processing with consistent testing methodologies. Structured comprehensive information will be highly valuable globally, taking the scientific knowledge in this area to the highest level.

“This study is first in a series of studies that has been worked on for the last four years as a part of the Smart Food initiative led by ICRISAT that will be progressively released in 2021. Included are systematic reviews with meta-analyses of the impacts of millets on: diabetes, anemia and iron requirements, cholesterol and cardiovascular diseases and calcium deficiencies as well as a review on zinc levels. As part of this, ICRISAT and the Institute for Food Nutrition and Health at the University of Reading have formed a strategic partnership to research and promote the Smart Food vision of making our diets healthier, more sustainable on the environment and good for those who produce it,” explained Ms. Joanna Kane-Potaka.

NOTE: This is also part of a special edition and theme section in the Frontiers journal - Smart Food for Healthy, Sustainable and Resilient Food System.

About the authors’ organizations/affiliations

ICRISAT: The **International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)** is an international agriculture research organization specialized on the drylands across Asia and Africa to ensure food, nutrition and income security, with global headquarters in India. www.icrisat.org

IFNH: The Institute for Food, Nutrition and Health at the University of Reading in the UK, brings together the university’s world-leading expertise in food, nutrition, agriculture, health and the environment to help deliver better diets and health. <https://research.reading.ac.uk/ifnh/>

IFPRI: The International Food Policy Research Institute, part of the CGIAR, provides research-based policy solutions to sustainably reduce poverty and end hunger and malnutrition in developing countries. It is headquartered in Washington DC, USA. www.ifpri.org

NIN: The National Institute of Nutrition is India’s premier public research institute for nutrition. Headquartered in Hyderabad, NIN continuously monitors India’s nutritional health and works to manage as well as prevent nutritional problems. www.nin.res.in

Kobe University: One of Japan’s largest and oldest national universities. It is an institute of excellence for the social sciences and promotion of interdisciplinary research and education. www.kobe-u.ac.jp

Avinashilingam Institute for Home Science and Higher Education of Women (deemed to be University) is dedicated to higher education for women and has a specialization in a wide range of Home Science (including food and nutrition), Sciences, Arts, Commerce and Engineering based in India. <https://avinuty.ac.in>

NTBN: The National Technical Board on Nutrition advises the Government of India. It provides evidence-based, technical and policy recommendations and guidance for matters of nutrition.