

Mankai duckweed plant found to offer health benefits

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Mankai, a new high-protein aquatic plant strain of duckweed, has significant potential as a superfood and provides glycemic control after carbohydrate consumption, a team of researchers from Ben-Gurion University of the Negev (BGU) has determined. Credit: Ben-Gurion University

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Hila Zelicha, a registered dietician (R.D.) and Ph.D. student in the BGU Department of Public Health and her BGU colleagues researched the glycemic aspect of Mankai duckweed. Her research was just published in *Diabetes Care*, the official journal of the American Diabetes Association.

In this new study, the researchers compared Mankai shake consumption to a yogurt shake equivalent in carbohydrates, protein, lipids, and calories. Following two weeks of monitoring with glucose sensors, participants who drank the duckweed shake showed a much better response in a variety of measurements including lower glucose peak levels; morning fasting glucose levels; later peak time; and faster glucose evacuation. The participants also felt more full.

The research group, led by Prof. Iris Shai, a member of BGU's S. Daniel Abraham International Center for Health and Nutrition and the School of Public Health, has found in several previous studies that Mankai duckweed has tremendous health potential as a superfood. This new research is a sub-study of the Dietary Intervention Randomized Controlled Trial—Polyphenols Unprocessed (DIRECT PLUS) which explores the effects of green- Mediterranean diet.

The Mankai duckweed [aquatic plant](#) is being grown in Israel and other countries in a closed environment and is highly environmentally sustainable—requiring a fraction of the amount of water to produce each gram of protein compared to soy, kale or spinach. It can also be grown year-round using hydroponic cultivation, which is another advantage.

Duckweed has been consumed for hundreds of years in Southeast Asia,

where it is known as "vegetable meatball" due to its high-protein content—more than 45% of the dry matter. It includes the complete protein profile of eggs, containing all nine essential and six conditional amino acids. In addition, Mankai is very rich in polyphenols, mainly phenolic acids and flavonoids (including catechins), dietary fibers, minerals (including iron and zinc), vitamin A, vitamin B complex, and vitamin B12 , which is rarely produced by plants.

A previous duckweed study conducted by Alon Kaplan, a Ph.D. student in Prof. Shai's lab, published in *Clinical Nutrition*, showed that the absorption of the essential amino acids from Mankai was similar to the soft cheese and plant (peas) equivalent in protein content, reinforcing its role as a high-quality protein source. Also, the study suggested that Mankai is a unique plant source of vitamin B12.

Another study by the researchers in the *Journal of Nutrition* published earlier this year by BGU Ph.D. student Anat Yaskolka Meir R.D., indicates that a Mediterranean diet with Mankai, elevates iron and folic acid levels, despite low quantities of red meat. This study also determined that iron from Mankai was efficient in treating iron-deficiency anemia in anemic rats to the same degree as the common treatment.

It is the aggregation of all of these properties which seem to make the easily integratable, tasteless and odorless plant, a good candidate to become a superfood. Harvard University apparently agrees, Mankai smoothies were introduced in the Harvard School of Public Health cafeteria recently.

More information: Hila Zelicha et al, The Effect of *Wolffia globosa* Mankai, a Green Aquatic Plant, on Postprandial Glycemic Response: A Randomized Crossover Controlled Trial, *Diabetes Care* (2019). [DOI: 10.2337/dc18-2319](https://doi.org/10.2337/dc18-2319)

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