Vegan protein supports muscle building as effectively as animal protein, according to study

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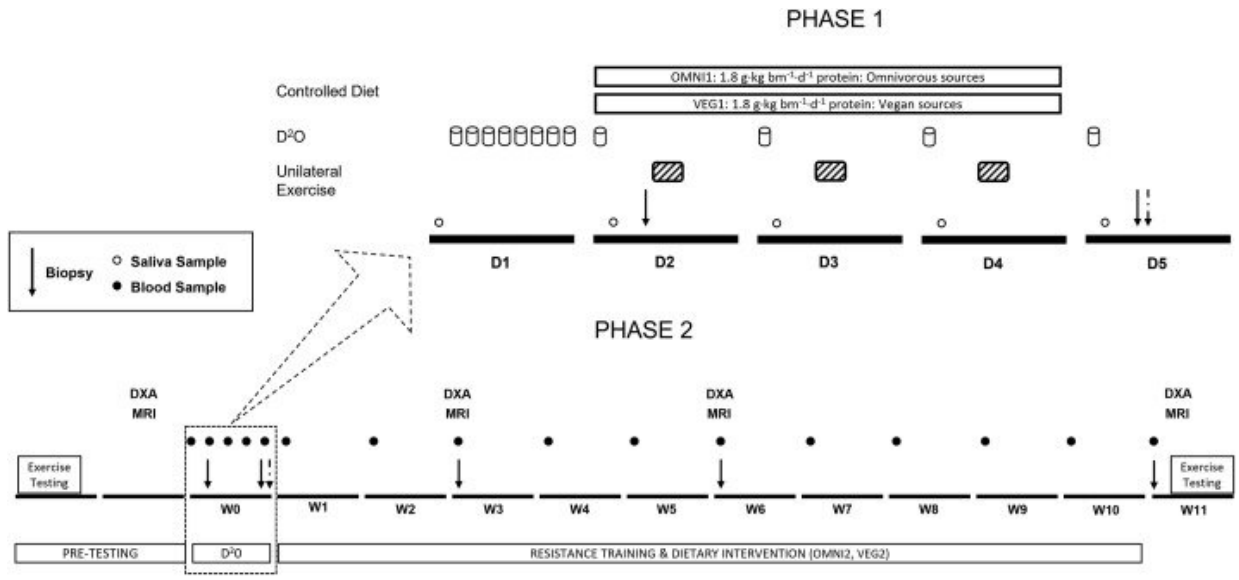

Schematic representation of the study protocol. Phase 1, 16 healthy young adults consumed a 3-d fully controlled, eucaloric, and high-protein (1.8 g·kg bm^{-1}·d^{-1}) diet, where the protein was provided predominantly from animal (OMNI1; n = 8) or exclusively non-animal (VEG1; n = 8) sources. During the dietary control period (days: 2–4) participants conducted a single bout of unilateral isokinetic knee extension exercise (5 × 30 contractions) each morning. On day 1, participants consumed 400 mL deuterated water with 50 mL doses consumed daily thereafter. Saliva samples were collected daily, and muscle biopsies were collected from both the rested (straight arrow) and exercised (dashed arrow) legs to determine daily myofibrillar protein synthesis rates. Phase 2, 22 healthy young adults completed a 10-wk high-volume resistance exercise training program, while consuming a high-protein omnivorous diet (OMNI2; n = 12) or a majority

non–animal-derived diet (VEG2; n = 10). Participants underwent DXA and MRI scans, muscle biopsies, and strength testing, at regular intervals to characterize resistance exercise-induced muscle adaptations. “D1,” “D2,” etc. refer to day 1, day 2, etc.; “W0,” “W1,” etc. refer to week 0, week 1, etc. OMNI, omnivorous; VEG, vegan. Credit: *The Journal of Nutrition* (2023). DOI: 10.1016/j.tjnut.2023.02.023

Fungi-derived mycoprotein is just as effective at supporting muscle building during resistance training as animal protein, according to the findings of a new study from the University of Exeter.

The study, published in the *Journal of Nutrition*, is the first to explore if a vegan diet rich in mycoprotein—the naturally high-fiber fungi that is best known as Quorn—can support muscle growth during resistance training to the same extent as an omnivorous diet. It comes as a growing number of adults are eating less meat, with latest figures showing that there are approximately 7.2m adults who now follow a meat free diet.

The randomized trial was split into two phases: in the first phase, 16 healthy young adults completed a three-day diet where their protein was derived from either omnivorous or exclusively vegan (predominantly Quorn's mycoprotein) sources, while detailed measures of metabolism were taken. In phase two, 22 healthy young adults completed a 10-week high volume progressive resistance training program while consuming a high protein omnivorous diet or a vegan diet rich in mycoprotein.

The results demonstrated comparable increases in muscle mass and strength in response to both diets, with no significant differences between the two. The group on the high protein omnivorous diet gained 2.6 kg of whole-body lean mass, while the group on the vegan diet gained 3.1 kg. Both groups also increased the size of their thigh muscles

by the same amount (8.3%) over the course of the trial.

Based on these results, the research team concluded that a vegan diet that's high in mycoprotein can be just as effective as a high protein omnivorous diet in building muscle during resistance training.

This study is the latest to demonstrate the potency of mycoprotein in muscle building, with research published by the University of Exeter in 2020 finding that mycoprotein builds muscle to a greater extent than milk protein, and a 2021 study concluding that a mycoprotein-rich vegan diet supports the maintenance of muscle tissue in older adults. However, this latest study is the first to directly compare mycoprotein with an omnivorous diet, including meat, and to do this over an extended 'free living' period of 10 weeks of the participants' daily life.

Commenting on the findings, Dr. Alistair Monteyne, the researcher who conducted the trial at the University of Exeter, said,

"It is well established that muscle building can be augmented by adhering to a high protein diet. However, it was previously unclear as to whether non-animal derived diets and non-animal derived protein sources, such as Quorn's mycoprotein, could support muscle building during resistance training to the same extent as omnivorous diets and animal-derived protein sources."

"Our study demonstrates that mycoprotein is comparable to animal proteins in terms of its ability to facilitate increases in muscle mass and strength in young adults who are regularly engaging in resistance training ."

"We now have a strong body of evidence, perhaps more than is available for any other alternative protein source, to show that mycoprotein is an effective protein food to support muscle maintenance and growth."

The study comes after a report involving University of Exeter researchers found that regular widespread consumption of plant-based proteins could be one of three 'super leverage points' that could give hope for a breakthrough on climate change through reducing emissions from livestock farming.

Tim Finnigan, Scientific Advisor for Quorn Foods, said, "At a time when a growing number of people are following official dietary advice to consume less meat for the sake of their health and the planet, it is positive that a high-quality meat-free protein that is scientifically proven to build muscle mass at a rate comparable to any animal-derived protein is available."

"This study builds on a growing body of independently conducted research, thought to be the largest to exist for any alternative protein, that clearly demonstrates mycoprotein's nutritional excellence as a complete protein with a proven ability to protect against a range of diseases and health conditions."

More information: Alistair J. Monteyne et al, Vegan and Omnivorous High Protein Diets Support Comparable Daily Myofibrillar Protein Synthesis Rates and Skeletal Muscle Hypertrophy in Young Adults, *The Journal of Nutrition* (2023). DOI: 10.1016/j.tjnut.2023.02.023

Provided by University of Exeter