

Dietary supplement increases muscle force by 50 percent in the Duchenne muscular dystrophy mouse model

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A dietary supplement derived from glucose increases muscle-force production in the Duchenne muscular dystrophy (DMD) mouse model by 50% in ten days, according to a study conducted by researchers from Université Laval's Faculty of Medicine and Centre hospitalier universitaire (CHU) de Québec Research Centre-Université Laval. The results, which were recently published in the scientific periodical *The FASEB Journal*, pave the way for a clinical study to test the treatment's effectiveness on humans.

DMD is a hereditary disease characterized by progressive [muscle degeneration](#). The disease puts affected people in a wheelchair by their teens. It also affects the heart and respiratory muscles, reducing the life expectancy of patients to less than 40 years. DMD affects roughly 1 out of 3,500 boys, making it the most common form of muscular dystrophy. There is no known cure for the disease. A steroid-based treatment can slow down muscle degeneration, but it causes serious side effects.

"People have a lot of hope for gene therapy, but it will still take years of research before we find an effective treatment," explains lead author Professor Sachiko Sato. "That's why it's important to find other treatments to help preserve the [muscular strength](#) of patients as long as possible."

Professor Sato and her collaborators tested N-acetylglucosamine, a

glucose derivative used as a [dietary supplement](#), on mice showing the main symptoms of DMD. "It's a simple sugar whose structure differs from that of glucosamine, which is sold to treat joint problems," specifies Professor Sato.

After ten days of treatment, researchers found that mice given N-acetylglucosamine had 50% increased muscular strength compared to mice from the control group. "We don't know yet whether the molecule increases the production of muscular fibre or improves its survival rate, but we found that the mice's muscular strength was better preserved," summarized Professor Sato.

Even though the study was conducted on laboratory animals, Professor Sato feels encouraged by the results. "N-acetylglucosamine is an inexpensive product that can be synthesized in a lab or extracted from crustacean shells. It is found in human milk as the sugar with the second highest concentration after lactose," she explained. "Everything indicates that it is worth testing its effectiveness in improving the quality of life of DMD patients. We now need to conduct clinical trials in order to confirm the substance's effectiveness on humans and determine the treatment's duration and dosage," Professor Sato concluded.

More information: Ann Rancourt et al, Galectin-3 and N-acetylglucosamine promote myogenesis and improve skeletal muscle function in the mdx model of Duchenne muscular dystrophy, *The FASEB Journal* (2018). [DOI: 10.1096/fj.201701151RRR](https://doi.org/10.1096/fj.201701151RRR)

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