

# Long-term grape consumption shown to improve muscle health in both men and women

*Western New England University*

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A new study from Western New England University (WNE) has revealed that long-term grape consumption significantly impacts muscle health, with notable benefits for both men and women. The research, published in the journal *Foods*, suggests that a diet including grapes can modify gene expression in muscle, potentially offering a new nutritional strategy for maintaining muscle mass and function.

Around 30 million tons of grapes are consumed every year, and their benefits extend beyond nutrition. Grapes have been shown to affect heart, kidney, skin, eye, and gastrointestinal health, among others.

## Key findings

The study found that daily grape consumption significantly alters muscle gene expression, with a more pronounced effect in females, ultimately bringing male and female muscle characteristics closer together at a metabolic level. Additionally, genes associated with lean muscle mass were elevated, while those linked to muscle degeneration were reduced, indicating improved muscle function. These findings suggest potential applications for age-related muscle loss, as 10-16% of elderly individuals experience sarcopenia or age-related muscle loss. The research highlights how a nutrigenomic approach, such as regular grape consumption, may complement traditional muscle maintenance strategies like exercise and high-protein diets.

“ *This study provides compelling evidence that grapes have the potential to enhance muscle health at the genetic level. Given their safety profile and widespread availability, it will be exciting to explore how quickly these changes can be observed in human trials.* ”

*Dr. John Pezzuto, senior investigator of the study and professor and dean of pharmacy and health sciences at Western New England University*

## Study overview

Nutrigenomics investigates how diet influences gene expression and how genetic variation impacts dietary responses. Grapes, rich in phytochemicals, exhibit potential disease-preventive properties through nutrigenomic mechanisms rather than direct chemical interactions. The research team investigated the impact of two servings of grapes per day on genetic expression patterns in muscle. As expected, male and female muscles showed major differences in control studies but, surprisingly, male and female muscles greatly converged into a single phenotype when provided with the grape diet.

The DNA of a single species, including humans, does not greatly differ, individual by individual. Rather, a major factor that differentiates people, such as eye color for example, is largely driven by the expression of DNA, i.e., the phenotype.

In the current study, it was made clear that ingestion of grapes changed the phenotypic gene expression of male and female muscle, but to a larger extent in females. This resulted in nearly all the measured metabolic parameters being the same. Based on the information that was deciphered from the expression of over 20,000 genes, male and female muscle converged to a common metabolic phenotype.

Interestingly, expression of specific genes associated with good muscle health, e.g., lean muscle mass, were elevated, and expression genes associated with poor muscle health, e.g., muscle degeneration, were decreased.

The researchers plan to further investigate the mechanisms behind these changes and the timeline for their effects. As nutrigenomics continues to evolve, this study paves the way for a new approach to muscle health that may benefit individuals across all age groups.

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**Source:**

Western New England University

**Journal reference:**

Dave, A., *et al.* (2025). Long-Term Dietary Consumption of Grapes Alters Phenotypic Expression in Skeletal Muscle of Aged Male and Female Mice. *Foods*. doi.org/10.3390/foods14040695.