



Vegetable-Source Glucosamine =
Brand Loyalty + Revenue

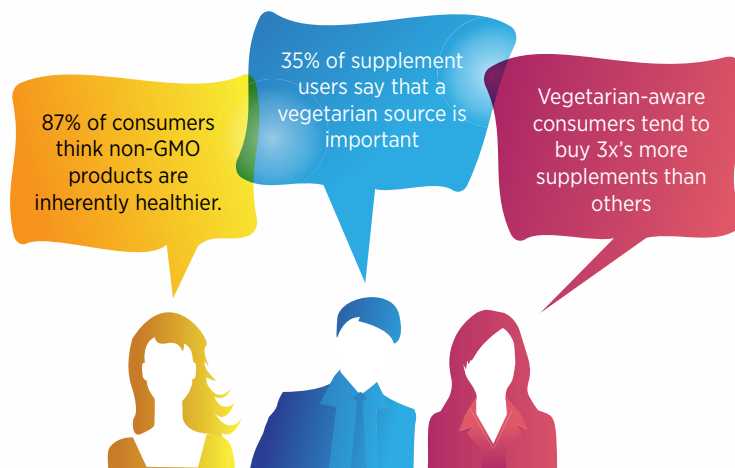


Long a mainstay of the supplement market, sales of glucosamine products have leveled off since 2009. Despite this trend toward commoditization, significant revenue potential still exists for manufacturers who tap into the rapidly growing vegetarian-aware and GMO-apprehensive markets – two consumer groups among those most focused on health and wellness.

Consider these facts

Today in the United States, 35% of supplement users say that a vegetarian source is important when choosing a supplement—up from 26% in 2006¹. These vegetarian-aware consumers tend to buy 3 times more supplements than other shoppers, and their purchasing patterns demonstrate brand loyalty².

At the same time, a 2015 survey found that 48% of global consumers are very concerned about GMOs in their diet, and 87% of consumers think non-GMO products are inherently healthier³. Specifically, 42% of supplement users feel non-GMO is important factor in their supplement purchases⁴.



With baby boomers continuing to age, participation in high-endurance sports on the rise, and an increasingly dominant millennial market segment seeking out preventative health and wellness solutions, the demand for glucosamine products will remain strong. To win market share, manufacturers can still seize the opportunity to cater to the growing and fiercely loyal vegetarian and non-GMO consumer segments.

New Sources = New Opportunities

The most common source of glucosamine, which supplies about 1,000 tons/month into the U.S., is derived from the Asian shellfish industry. The manufacturing process for this material, relying on acid hydrolysis of chitin, presents significant shortcomings, including raw material pollution. The finished product also requires label warnings for potential allergic side effects. Vegetarian and ingredient-aware consumers shy away from supplements made with shellfish.

In August 2015, Ethical Naturals Inc. (ENI) introduced a new option to the U.S. market with its GreenGrown® Glucosamine product. ENI obtained the



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license from Wisconsin-based Akzion Life Sciences (ALS) to a patented process that employs microbial fermentation to produce N-acetyl glucosamine or glucosamine products from non-GMO glucose.

For supplement manufacturers eager to grow market share among the rapidly growing vegetarian and vegan market, those prone to allergies, as well as consumers shopping for supplements that are GMO-free, microbial-fermentation-derived glucosamine introduces high-quality, vegan glucosamine options that promise a market advantage. Plus, vegetarian glucosamine commands a premium price an average of 26% higher than non-vegetarian supplements⁵.

GreenGrown® glucosamine also formulates well with other vegetarian joint care ingredients, such as MSM and hyaluronic acid, and is ideal for encapsulation into vegetable capsules.

Traceability = Consumer Trust

Consumers are more aware than ever before of the dangers posed by tainted ingredients. That's why supply chain transparency and traceability translate into more sought-after brands. Two-fifths of supplement users (44%) are concerned about tainted or illegal ingredients in supplements and welcome education on the safety of the formulation process⁶. Consumers want to feel secure that the ingredients in their supplements are not only effective but also safe and free from contaminants.

Manufacturers looking for a market advantage need suppliers who can attest to the purity and potency of their ingredients via transparent processes for botanical testing, product analysis, ingredient identity and regulatory compliance.

In the case of ENI's GreenGrown® Glucosamine, ENI conducts U.S.-based testing of every ingredient and provides full ingredient chain-of-custody data.

Ingredients are first tested through a patented Isotopic Carbon Signature Tracing Method (ISCT) that identifies the unique markers that differentiate between shellfish- and vegetable-based glucosamine. This is an important step because under traditional HPLC analysis, vegetarian and shellfish-derived materials appear identical, and so substitution can occur. Objective identification, as accomplished by the ISCT method, is essential for product labeling and for consumers who are allergic to shellfish, are vegetarian or who for religious reasons cannot consume shellfish.

GreenGrown® is then further tested through an NSF-111 certified testing laboratory and QC program, assessed via USP standards, and confirmed by PCR testing to be non-GMO.

Clean Labels = Clear Path to Profits

Consumers' growing appetite for "clean label" foods and beverages has now extended into the supplement market. While clean label claims are currently tracked on approximately 25% of all food and beverages⁷, an opportunity exists for clean label first movers in the supplement sector. In fact, given the role supplements play in consumers' health and wellness, the demand for clean supplement labeling promises to escalate even more quickly than it has for other, less health-oriented products.

Simply put, consumers want to know what the products they buy are made of and how they are made. They want assurances that their products' ingredients are untainted, free from chemical or industrial additives, and as close as possible to their natural form.



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Clean labeling in supplements signifies that the products are free from:

- **Allergens**
- **Preservatives**
- **Artificial colorants**
- **Lactose**
- **Nutritive fillers like sugar, starch, artificial flavors**
- **GMOs (genetically modified organisms)**
- **Gluten (wheat, barley, rye)**

Consumers reward clean label manufacturers with a willingness to pay a premium price. In fact, the average price of clean label supplements is 26% higher than non—clean label supplements⁸.

GreenGrown® Glucosamine is clean label compliant.

An Untapped Market

By satisfying the demands of the rapidly growing vegetarian-aware and GMO-apprehensive markets, glucosamine manufacturers have the potential to transform their commodity business into an emerging growth market opportunity. The secret lies in clean label, vegetarian formulations that avoid GMO ingredients.

To learn more about GreenGrown® and how it can help you grow your glucosamine bottom line with premium-quality, non-GMO, USP-grade vegetable glucosamine, visit GreenGrownGlucosamine.com or call 415.459.4454.

Resources

¹ Natural Marketing Institute, Supplement/OTC/Rx Database (SORD) Overview, November 2013

² Capsugel Non-Animal Portfolio Survey, US, UK, Germany, France, & Italy, February 2012

³ HealthFocus International—Global Shopper Views on GMOs 2015

⁴ Natural Marketing Institute, Supplement/OTC/Rx Database (SORD) Overview, November 2013

⁵ Natural Marketing Institute, Supplement/OTC/Rx Database (SORD) Overview, November 2013

⁶ Natural Marketing Institute, Supplement/OTC/Rx Database (SORD) Overview, November 2013

⁷ foodingredientsfirst.com, November 2014

⁸ Natural Marketing Institute, Supplement/OTC/Rx Database (SORD) Overview, November 2013



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