

Clinician Considerations for Assessing Dietary Supplement Quality

By Miriam Weidner

The 2010 projected total global market for nutraceuticals is in the neighborhood of \$187 billion. US contribution to this number represents 32 percent, or about \$21 billion, of which the majority of use focuses on the categories of weight loss, heart problems, and digestion.¹

Further, research-based evidence has proven sufficient to compel FDA approval for full and qualified dietary supplement health claims, such as those for calcium and vitamin D in osteoporosis, folic acid for neural tube birth defects, and plant sterols and stanols in coronary heart disease risk reduction. Additionally, research shows pharmaceutical drug treatments can interact with and/or deplete healthy levels of certain vitamins and minerals.

It is no wonder supplement use has moved out of the natural grocery aisle and into the examining room. In fact, “more than three-quarters of US physicians (79%) and nurses (82%) recommend dietary supplements to their patients,” according to the Healthcare Professionals Impact Study from the Council for Responsible Nutrition (CRN), released in early 2009. Many healthcare practitioners now offer supplements to their patients directly in the office.

Things You Should Have Learned in School?

Some clinical curricula, however, exclude significant instruction dedicated to nutrition and health, let alone objective information about assessing supplement quality and efficacy as linked to research-based recommendations.

“Most healthcare practitioners end up choosing a supplement brand ‘by accident’ rather than as a result of personal research,” says Rick Liva, RPh, ND, and CEO of Vital Nutrients. “It’s unfortunate, because this is one of the most important aspects of a typical practice. Practitioners need to take time to educate themselves about the keys to supplement quality.”

Certain signs of poor quality are obvious—disease claims on marketing materials or labels or improper labeling altogether, such as the absence of a proper supplement facts box and missing “best by” or expiration date. Egregious mistakes signify ignorance or a general disregard for regulatory responsibility—both potential signs of poor quality control. But even when these unmistakably deficient brands are set aside, practitioners are still left with a dizzying array of product choices.

Indeed, most of the many dietary supplement manufacturers servicing clinicians maintain quality standards and meet basic requirements set out by the Dietary Supplement Health and Education Act (DSHEA). The question then becomes distinguishing superior quality among the options.

Good Manufacturing Practices (GMPs)

In the US, the FDA regulates dietary supplements via DSHEA. As required by DSHEA, FDA recently established dietary supplement good manufacturing practices (GMPs) to provide the baseline for quality standards among supplement manufacturers. GMPs, imple-

mented in 2007 for rollout to all manufacturers by 2010, have the force of law. They are designed to ensure manufacturers follow procedures to keep products safe, effective, and free of harm. GMPs include requirements around the process of product supply, preparation, testing, and storage. GMPs also regulate the packaging and labeling of products.

Third-Party Certifications

Adherence to GMPs is often substantiated via a third-party audits by organizations like the Natural Products Association (NPA) and NSF International, and include an FDA audit of facilities. Other third-party verifications include ConsumerLab certification, botanical testing by the Institute for Nutraceutical Advancement, the National Nutritional Food Association’s (NNFA) TruLabel program, Paracelsian’s BioFIT certification, USP standards, and the Council for Responsible Nutrition standards.

These audits are meant to assure customers regarding GMP verification and are intended as a “short cut” for practitioners who might not have the time to conduct their own rigorous research. Practitioners will want to learn more about each program online, and look for designating marks on product labeling or brand.

The Emerson Quality Partner (SM) program, recently launched by distributor Emerson Ecologics™ is another such program. “The supplement manufacturing process is very complex,” says Lise Alschuler, ND, FABNO, Emerson’s vice president of quality and education. “Each product often includes multiple layers of production and supply, with many sources within each layer. The EQP is an investment in researching and verifying the quality practices on the customers’ behalf so they can successfully incorporate product quality into their practices.

The EQP Seal will mark manufacturers who successfully complete an audit and checkpoint verification process meeting quality targets established by Emerson Ecologics. The team uses a combination of self-disclosed GMP and third-party audit information from organizations like NSF and NPA, along with Emerson’s own onsite audit and document audit.

“Companies can’t buy their way in or out of the program,” Alschuler emphasizes, “Our customers will be able to trust the EQP Seal as a sign of product purity, potency, identity, and stability.”

Research and Testing

Rigorous testing is another cornerstone of quality assurance. As vice president of regulatory affairs and quality assurance/quality control for Integrative Therapeutics, Travis Borchardt is intimately involved with every aspect of supplement manufacture.

“There are a few key categories a practitioner wants to assess regarding product quality, safety, and effectiveness,” says Borchardt. “Identity of materials, product stability over time, contaminant testing, and potency assays are all important signifiers of a quality manufacturing facility.”

Liva echoes, "It's 'Show me the quality,' yes, but it also needs to be 'Show me the testing!'" In the service of this kind of discovery, Liva has created *Manufacturer Certification and Quality Assurance Self-Audit, a guide for practitioners seeking more information from supplement manufacturers*. Liva's manual contains questions soliciting information about companies, personnel, quality procedures and GMPs, raw materials, and finished products. Within the audit, Liva identifies several "critical" questions (see sidebar) he believes most important for quality, which gives practitioners a good place to start during the research process.

Practitioners should also ask manufacturers about the research driving their product development. "An important indicator of product quality is the incorporation of clinically studied, branded, or patented ingredients," says Barry Ritz, PhD, vice president of scientific affairs for Atrium Innovations. Underwriting either in-house or third-party research, both generally and product- or ingredient-specific, can be a significant manufacturer investment and good indicator of commit-

ment to product quality. Supplement companies sponsoring basic and/or clinical research benefit the industry and clinical care, and are often industry leaders.

Your Own Proactive Approach

If possible, both Liva and Borchardt encourage practitioners to come to a manufacturing facility for a personal tour and visit with key personnel. Such an effort is certainly a commitment of time and energy, but also yields rich information and promotes an awareness of product only achieved from direct contact.

As a practitioner, you have the opportunity and responsibility to drive standards through demand. Insist on proof of product claims and vote with your dollar. All manufacturers will be compelled to see the benefit of increasing and verified quality assurances. In turn, this raises the standard of all levels of the supply chain and results in safer, more effective products for you and your patients.

Supplier Certification Questionnaire Compliance Guide

The full questionnaire asks a series of questions regarding the quality practices and GMP compliance of the supplier. The author has identified the following selected questions as critical points to an appropriate quality system.

1. Do you have a cGMP system in place? If so, which do you follow:
 - a. Food cGMPs
 - b. FDA cGMPs for Dietary Supplements
2. Do written records exist of employee training and education?
If yes, please attach an example.
3. If you have an in-house lab:
Name/email of supervisor:

How many analysts by level of education are in the lab?
GED ____ BS ____ MS ____ PhD ____

- 4a. **When doing in-house or independent testing of "BOTANICAL" raw materials are they checked for:** (Please provide 2 examples of test data for each item a-g)

For all of the following, if yes, also answer:

Are SOME or ALL materials tested? (circle answer)

If yes, how often? (Choose one)

1. Each batch received
2. Skip lot testing (If so, how often?) _____
3. Other _____
 - a. Identity (To authenticate material or botanical genus & species)
 - b. Microbiology Profile (Bacteria, Yeast & Mold)
 - c. Potency (if potency claim exists)
 - d. Heavy Metals (Lead, Mercury, Cadmium, Arsenic)
 - e. Chemical Solvent Residue
 - f. Aflatoxins
 - g. Herbicides & Pesticides Residue

If your company does not test one or more of these items on every batch of material please provide a detailed rationale for how you prove that omitting the analysis is not missing a quality parameter.

- 4b. **When doing in-house or independent testing of "NON-BOTANICAL" raw materials are they checked for:** (Provide 2 examples of test data for each item a-g)

For all of the following, if yes, also answer:

Are SOME or ALL materials tested? (circle answer)

If yes, how often? (Choose one)

1. Each batch received
2. Skip lot testing (If so, how often?) _____
3. Other _____
 - a. Identity (To authenticate material)
 - b. Microbiology Profile (Bacteria, Yeast & Mold)
 - c. Potency (if potency claim exists)
 - d. Heavy Metals (Lead, Mercury, Cadmium, Arsenic)
 - e. Chemical Solvent Residue

If your company does not test one or more of these items on every batch of material please provide a detailed rationale for how you prove that omitting the analysis is not overlooking or missing a quality parameter.

5. Metal Detection:

Are all in-process materials metal detected? If so, by what method?

Are finished products metal detected? If so, by what method?
6. How is the effectiveness of metal detection measures evaluated? (Please attach rationale)
7. Are your finished products tested for label claim potency prior to release for sale?

If yes, please provide full test data for 3 different products

If no, please provide a rationale for how you prove you meet label claim
8. Do you do label claim potency testing (Stability Testing) to verify that the product meets label claim through out the expiration dating period?

If yes, please provide stability potency assays on 3 different finished product batches that were tested to verify the expiration date claim.

If not, please provide a detailed rationale for how you prove that you have met the label claim through the dated period.

Experts Interviewed



Lise Alschuler,
ND, FABNO

Lise Alschuler, ND, FABNO, is a naturopathic physician with board certification in naturopathic oncology. She practices naturopathic oncology at Naturopathic Specialists, LLC, in Scottsdale, Ariz. Dr. Alschuler has authored many articles in professional and popular press publications and is the coauthor of the *Definitive Guide to Cancer: An Integrative Approach to Prevention, Treatment and Healing*. She currently serves as president of the American Association of Naturopathic Physicians.



Rick Liva,
RPh, ND

Enrico Liva, RPh, ND, graduated from Temple University School of Pharmacy in 1975. In 1982 he was awarded a doctor of naturopathic medicine degree from the National College of Naturopathic Medicine. He has been in private practice as a naturopathic physician since 1982 and is the managing physician at The Connecticut Center For Health. Liva is a founding member and two-time past board member of the American Association of Naturopathic Physicians. He is a past board member and past president of the Connecticut Society of Naturopathic Physicians. Liva

has been involved in dietary supplement manufacturing since 1985. He is the Chief Medical Officer and Director of Quality Control and Quality Assurance at Vital Nutrients, the industry leader in the quality assurance and production of high quality natural products. Vital Nutrients is cGMP certified by the NPA.



Travis
Borchardt

Travis Borchardt is vice president, regulatory affairs and quality assurance/quality control for Schwabe North America. He is a graduate of University of Wisconsin-Madison's prestigious Food Science Program and also holds an MBA from University of Wisconsin-Oshkosh. He has spent more than 10 years at Enzymatic Therapy reinventing the standards of quality assurance, quality control, laboratory practice, and transparency with governmental agencies, resulting in National Sanitation Foundation's Good Manufacturing Practices Certification, the Food and

Drug Administration's Drug Establishment Registration, United States Department of Agriculture's National Organic Program Certification, and European Union Drug GMP Certification. As a board member of the American Herbal Products Association, Borchardt helps to shape the quality standards for the entire industry.



Barry Ritz,
PhD

Barry W. Ritz, PhD, is vice president of scientific affairs for Atrium Innovations, where he leads the innovation program. Atrium Innovations is a leading international manufacturer and marketer of high-quality human nutrition products, including the Douglas Laboratories, Pure Encapsulations, and Sedona Labs Pro brands. Ritz is also an active researcher in the field of nutritional immunology and is involved in numerous professional organizations, such as the American Society for Nutrition and the Medical Affairs Sub-committee of the Council for Responsible Nutrition.

About The Author



Miriam has directed all aspects of print and online media and has published and launched award-winning magazines and newsletters. Her expertise in Web 2.0 research, strategy, and execution derives both from transforming print products into integrated online experiences and as Account Director at a leading social media analytics firm. Miriam's client list has ranged from natural product start-ups to LOHAS lynchpins like Whole Foods, Vitamin World, and the Chopra Center. She's also worked with mass-market giants such as General Mills, Chrysler, Levi Strauss, Sony, Janus Funds, and Beam Global. Miriam is a recent graduate of the executive program for Sustainability Management at the Presidio School in San Francisco and holds a B.A in English from Duke University.

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Efficacy of a Systemic Enzyme Formulation in the Treatment of Shoulder Tendinitis

Commentary by: Commentary by Joseph J. Collins, RN, ND

Reference: Szczurko O, Cooley K, Mills EJ, Zhou Q, Perri D, Seely D. Naturopathic treatment of rotator cuff tendinitis among Canadian postal workers: a randomized controlled trial. *Arthritis Rheum.* 2009;61(8):1037-1045.

Design: A prospective randomized clinical trial.

Participants: Canadian postal workers with rotator cuff tendonitis/tendinitis for a duration of greater than 6 weeks. The "Naturopathic Care" group had 43 members, of whom 25 were women and 18 were men. The "Physical Exercise" group had 42 members, of whom 25 were women and 17 were men.

Study Parameters Assessed: Patients were randomized to "Naturopathic Care" (NC) which included acupuncture, recommendation of an anti-inflammatory diet, and Phlogenzym® (which is called Wobenzym® PS in the United States), and enteric-coated polyezyme formulation containing trypsin, bromelain and rutin; or to the "Physical Exercise" (PE) group, which included physical exercise, hands-on shoulder muscle and joint therapy, and matched placebo tablets. Both groups consisted of well-developed therapeutic doctor-patient relationships, patient motivation, and consumption of a pill.

Primary Outcome Measures: The primary outcome measure was the Shoulder Pain and Disability Index (SPADI), and secondary outcomes were the pain Visual Analog Scale (VAS), Short Form 36 (SF-36), Measure Yourself Medical Outcomes Profile (MYMOP), and shoulder maximal range of motion.

Key Findings: Final total SPADI scores decreased by 54.5% in the NC group and by 18% in the PE group. Between-group differences in changes to SPADI scores showed statistically significant decreases in shoulder pain and disability in the NC group compared with the PE group. Significant differences between groups were also observed in the VAS, MYMOP, SF-36, and shoulder extension, flexion, and abduction, with the NC group showing superiority in each outcome.

Practice Implications: Naturopathic care that included acupuncture and Phlogenzym®/Wobenzym® PS dramatically improved patient outcomes compared to standard physical therapy. Significant results were achieved within 8 weeks of treatment and no serious adverse events were reported. A recent study by Lathia, et al, reported that acupuncture may be an effective treatment for chronic shoulder pain.¹ Although it is not possible to isolate the role of Phlogenzym®/Wobenzym® PS in this small study design, improvement in periartthritis humeroscapularis tendopathy was previously reported by Kullich and Klein, in a study in which Phlogenzym®/Wobenzym® PS was at least as successful as the non-steroidal anti-inflammatory drug diclofenac, with a moderate superiority of the enzyme formulation when calculated by the Mann-Whitney statistics.² Further, Szczurko and colleagues rightly point out that the Phlogenzym®/Wobenzym® PS formulation has demonstrated anti-inflammatory effects in a number of previous studies related to diseases or trauma of the joints, including osteoarthritis, rheumatic disease, and traumatic injury.^{3,4,5,6} In addition to shoulders, treatment with Phlogenzym®/Wobenzym® PS has also demonstrated improvement of function in knee and hip joints, including decreased pain and has been used as an adjuvant in the treatment of rheumatoid arthritis.^{7,8,9} Inflammatory tendinitis is mediated at least in part by cytokines, including elevated levels of TGF-beta.¹⁰ It has previously been reported that intestinal absorption of the Phlogenzym®/Wobenzym® PS formulation triggers the formation of TGF-beta binding species of alpha-2-macroglobulin (a naturally occurring serum protein), such that high concentrations of TGF-beta are reduced via enhanced clearance of alpha-2-macroglobulin-TGF-beta complexes.¹¹ Noting that the Phlogenzym®/Wobenzym® PS formulation was used successfully in conjunction with diet and acupuncture and observing that multimodal therapies are common in both naturopathic and allopathic medicine, Phlogenzym®/Wobenzym® PS might be a reasonable adjuvant, or component of comprehensive treatment, for the management of inflammatory joint pain.

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About Joseph J. Collins, RN, ND

Joseph J. Collins, RN, ND, is a board certified naturopathic physician who trained at the National College of Natural Medicine. He is also a registered nurse, with specialization in critical care. He is the author of *Discover Your Menopause Type*. His naturopathic medical practice has always focused on an integrative approach to healthcare, with an emphasis on integrative and functional endocrinology and cellular signaling. He has participated in the development and expansion of diagnostic laboratories and integrative healthcare clinics on both United States coasts. As an experienced medical educator he has presented educational lectures to physicians, pharmacists, and consumer groups on diagnostic and therapeutic applications within the integrated, functional medicine model.

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