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GLA oils: A study on consumer purchasing behaviors

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With the continuing interest in essential fatty acids and nutritional oils, demand for GLA continues to grow. Evening primrose and borage oil, with GLA levels of 10% and 20% respectively, have long been popular dietary supplements, and Arcadia Biosciences is developing safflower oil containing gamma-linolenic acid (GLA) at levels in excess of 35%.

Despite this burgeoning popularity, very little is known about consumer perception or what actually drives demand for GLA. Limited research indicates that more economical and more concentrated sources of GLA would increase demand even further, catalyzing new research on the use and effectiveness of GLA. To better understand consumer purchasing behaviors and knowledge about GLA, we have conducted quantitative and qualitative consumer research focusing on current consumers' purchasing behavior, drivers and the decision making processes around their purchase and choice of GLA products. We believe the results described herein to be indicative of consumers' perceptions and attitudes within the United States; however, as with all qualitative studies, broad generalizations are discouraged.

Biological effects of GLA

The basic biological and physiological effects of GLA are generally well documented. Under normal conditions, GLA is synthesized *in vivo* from dietary linoleic acid. However, there is a growing body of evidence suggesting that ageing, stress, poor diet and multiple disease conditions interfere with GLA formation, reducing accumulation of GLA and its desirable metabolites such as dihomogamma-linolenic acid (DGLA). In such instances, GLA may be considered to be an essential dietary fatty acid and dietary supplementation may provide significant health benefits.

A daily GLA intake of 0.3–1.5 grams has been shown to increase levels of DGLA in membrane phospholipids. While the argument is often made that high GLA intake results in increased and undesirable biosynthesis of arachidonic acid (ARA), modest intake of EPA has been shown to minimize ARA production and accumulation. Both DGLA and ARA are precursors of several types of eicosanoids involved in inflammation, with an important distinction: ARA-derived eicosanoids are primarily pro-inflammatory, whereas eicosanoids derived from DGLA typically have anti-inflammatory effects. Given the anti-inflammatory effects of GLA, it may potentially mediate numerous health and disease states, including PMS, arthritis, skin health, diabetes and cardiovascular health.

Unless specifically supplemented, the typical western diet is essentially devoid of GLA. The most concentrated sources of GLA are not traditional foods, but rather non-traditional oils from plant seeds and microorganisms. Plant seed oil sources include borage (*Borago officinalis*), evening primrose (*Oenothera biennis*) and blackcurrant (*Ribes nigrum*); GLA-producing microorganisms include cyanobacteria (*Spirulina maxima* and *S. platensis*) and fungi (*Mucor javanicus* and *Mortierella isabellina*). Other known sources of GLA are in development.

Market for GLA oil

While reliable published data are difficult to obtain, the retail market for GLA oils, sold primarily in the form of softgel dietary supplement capsules, is believed to exceed $100 million. Total global production of evening primrose oil (EPO), mostly from Chinese sources, is estimated at 1,000-2,000 metric tons while borage production, largely in the United Kingdom with smaller quantities produced in Holland, Canada and New Zealand, is about 50% lower.

There are numerous brands of EPO and borage oil capsules on the market. While some brands carry both types of oils, others sell only one or the other. Likewise, a review of product labels indicates that there is neither consensus nor conformity on adequate or recommended doses of GLA, which can range from approximately 90 mg – 1,000 mg per day. Further, GLA oil products bear a wide variety of different structure function (S/F) claims.

Consumer research

In an attempt to determine consumer preferences we conducted a consumer research study. The first phase of the study was a telephone survey of 1,000 randomly chosen households. The survey utilized questions with category scale responses and the sample was balanced to be reflective of the continental United States based on region, population density, household income, household size and household type. The results were weighted, using the Current Population Survey from the U.S. Census Bureau, to give appropriate representation on various demographic factors, including gender, age, income and region.

Based on data derived from this survey and the 2000 U.S. census data, we estimate that approximately 6 million adults

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purchase GLA-oil products. Two-thirds purchase EPO and most of the remainder buy borage oil, the two main oil products. Consumers of GLA are mostly female by a ratio of 2:1, 70% of whom are users of EPO. Males do not have a preference for one or the other, using borage and evening primrose oils equally. There is no significant differentiation of use across most major demographic criteria (region, household income, marital status). Adults of all ages use GLA and there was no discernable age related skew. Consumers purchase GLA products in multiple locations. Almost half buy at a mass merchandise store such as Wal-Mart or Target and 42% purchase at health food stores. One-third of consumers purchase GLA at drug stores or pharmacies, while approximately 25% purchase online, via mail order or from a grocery store.

Focus groups

Based upon the responses derived from this survey, we conducted a series of four focus groups, two each in San Francisco, California, USA, and suburban Chicago, Illinois, USA. We employed a focus group moderator with extensive experience in the nutrition/dietary supplement industry. Participants were prescreened to match the demographics determined from the telephone survey. The interview guide was designed to encourage individual comments and promote group discussion of respondents' current usage patterns, knowledge of GLA products, health benefits, label claims and purchase drivers. Participants were encouraged to bring in the products they use and we also supplied numerous examples of products to facilitate comparisons of recommended dosing, label claims and brands. We also probed how they obtain their nutritional and efficacy information and whom they consider to be their chief influencers. Finally, we presented a series of product concept pairs for respondents to choose between to elicit dialogue on what factors may be important regarding intake, dosage, cost and names.

Focus group results

Results obtained from the focus group study showed that consumers of GLA oil do not consider physicians, in general, to be credible and trustworthy sources of information about dietary supplements, leading them to seek information elsewhere. Opinions of popular health gurus obtained from newsletters or web sites, as well as friends and family are more likely to be respected than physicians. The Internet is also a key resource, with males (77%) being more likely than females (44%) to search online for information about dietary supplements. Typically, consumers will visit and read more than one Internet site for supplement recommendations. "Independent" websites were generally considered more credible and unbiased than corporate or organization sponsored sites.

In spite of trying to educate themselves and in part due to sometimes questionable sources of information, the focus group respondents were neither adequately informed nor knowledgeable. A number of participants exhibited a holistic belief, indicating that the benefit comes from the "whole food" or supplement and the interaction of ingredients in the product rather than a single ingredient. More than 50% were unaware that GLA is the active ingredient in borage and evening primrose oils. There was a wide divergence of knowledge and beliefs about dosing and response to supplementation. Some believe that the benefit "washes out" with water. Even more startling, some believed that the benefit is immediate. Several respondents said that they take more on a "bad day" which should have no impact beyond a placebo effect. Some respondents were satisfied with low GLA dose products, while others looked for the highest dose products available. There was also an underlying assertion that products available from small companies or "mom and pop" shops were ideally formulated and of higher quality than those from large pharmaceutical or branded companies.

While many of the participants regularly consumed a multitude of dietary supplements, they expressed many distrustful comments regarding the industry in general. They also distrusted labeling claims, which many viewed as exaggerated.

Despite their distrust of the industry, a willingness to be influenced was observed. As an example, when presented with information on GLA as the active ingredient in EPO and borage oils, consumers readily chose between different product concepts on the basis of GLA content, usually preferring those with higher GLA levels. This was particularly true if they represented a better value (more GLA per $ spent). However, some respondents were wary of products with high levels of GLA, believing that they might have undesired side effects. Such respondents tended to be those who took a more holistic than scientific approach to supplement choices.

There was a tendency of participants to highly value "naturalness," but their behaviors showed that they were more interested in products with an attractive brand name and label with competitive price. Naturalness seemed to be a secondary factor in their purchase decisions. The overwhelming primary purchase driver was the number of capsules recommended for effective dosage per day with 1 pill per day being the strong consumer preference. Also with most consumers, price and a trustworthy brand name were key factors to also consider.

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While familiar with the literature and commonly stated uses for GLA, we queried consumers on the reasons why they use GLA products. Most listed more than one reason. In order of prevalence, those reasons were:

- 83% Improve general health
- 52% Reduce inflammation
- 44% Reduce joint or other body pain
- 44% Improve the appearance of skin
- 28% Reduce eczema, dermatitis or itchy skin
- 28% Reduce PMS/Premenstrual syndrome
- 12% Reduce diabetic neuropathy
- 4% Other: e.g. heart health, cancer prevention, yeast infection, menopause symptoms

Conclusions

Based upon the results of this study, it is apparent that consumers are clearly in need of additional factual information about GLA, as well as recommended GLA dosing levels for specific health states in order to make fact-based decisions about GLA product offerings. To the extent practical, the industry should make a concerted effort to provide this information. As many GLA consumers use the Internet, consumer-friendly information would be of significant benefit. This presents an opportunity to position GLA as a healthy fatty acid in its own right, rather than focusing on the real and perceived similarities and differences between evening primrose oil and borage oil.

This article is an adaptation of "GLA: The 'Good' Omega 6" by Julianne Lindemann and Alexander Merolli published in Nutraceuticals World, March 2006. *Julianne Lindemann is principal of Life Sciences Alliance, Moraga, California, USA. Alexander Merolli is principal and co-founder of Life Sciences Alliance and member of Stratecon International Consultants, Pleasanton, California, USA. Frank J. Flider is vice president business development-nutrition, for Arcadia Biosciences, Inc., Phoenix, Arizona, USA. Contact Flider by e-mail: Frank.Flider@ArcadiaBio.com.* ■

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