The MOSS NUTRITION REPORT

Jeffrey Moss, DDS, CNS, DACBN ⇔ jeffmoss@mossnutrition.com ⇔ 800-851-5444 ⇔ www.MossNutrition.com

Product Review

#267 June 2014

SARCOSELECT™ – A MULTINUTRIENT FUNCTIONAL FOOD DESIGNED TO OPTIMIZE QUALITY OF LIFE IN TODAY'S CHRONICALLY ILL PATIENT – PART II

As I stated in part I of this series, when considering optimal foundational dietary supplementation for chronically ill patients who are middle-aged and older, the long held belief that a multivitamin/mineral supplement is all that is needed no longer applies, due to the current complexities of chronic illness today plus the fact that many chronically ill patients are already ingesting significant amounts of micronutrients either through supplementation, ingestion of fortified food, or both. Of course, I am not suggesting that micronutrient supplementation is altogether unnecessary. Rather I am suggesting that, while it is still appropriate to supplement micronutrients with many, if not most chronically ill patients, they need much more from a foundational standpoint. First and foremost, as I mentioned in part I, macronutrient supplementation is extremely important with emphasis on quality protein in general and optimal leucine intake in particular. However, current research also makes it clear that, for protein supplementation to have the most optimal clinical impact, one other ubiquitous factor also needs to be addressed – **chronic inflammation**.

As suggested in the paper that provides the research basis for **SarcoSelect™,** "Muscle protein synthesis in cancer patients can be stimulated with a specially formulated medical food" by Deutz et al (Deutz NEP et al. *Clin Nutr*, Vol. 30, No. 6, pp. 759-768, December 2011), supplementation of anti-inflammatory constituents is also essential. While Deutz et al advocated the use of fish oil, it was not possible to include fish oil in **SarcoSelect™** due to the fact that **SarcoSelect™** is a powdered product. Instead we included the herb curcumin. However, in order to maximize efficacy, we opted not to use typical commercial curcumin due to significant concerns about bioavailability. Fortunately, we were able to locate a curcumin/phosphatidylcholine combination called Meriva® which has a very impressive absorption and efficacy profile, as you will see in the following papers I am about to review.

Specifically, what is the nature of the problem with typical curcumin bioavailability? This question was answered in the paper "Efficacy and safety of Meriva®, a curcumin-phosphatidylcholine complex, during extended administration in osteoarthritis patients" by Belcaro et al (Belcaro G et al. *Alt Med Rev*, Vol. 15, No. 4, pp. 337-344, 2010). The authors state:

"Most of the beneficial effects of curcumin are suggested by epidemiological studies, supported by studies in animal models, and extrapolated from *in vitro* studies, but not validated clinically. This paradoxical situation is due to the poor stability of curcumin, which is highly unstable at intestinal pH (half-life at pH 7 <10 min), and low oral absorption. Plasma concentrations barely reach 50 ng/mL of phase II metabolites (glucuronides and sulfates) after oral administration of dosages as high as 12 g/day. Once in the plasma, however, curcumin enjoys surprising stability and even permeability to tissues hard to reach like the brain.

Similar to most dietary phenolics, curcumin is sparingly water and lipid soluble. It has polar

groups (two phenolic hydroxyls and one enolic hydroxyl) that can interact via hydrogen bonds and polar interactions with a complementary group, like the polar heads of phospholipids."

However, when complexed with phospholipids, curcumin bioavailability is dramatically altered. The authors state:

"Phenolics show a high affinity for biological membranes and, once complexed with phospholipids, are embedded into a lipid matrix that, while shielding them from hydrolytic degradation, can lead to an increased cellular uptake by capitalizing on the rapid exchange of phospholipids between biological membranes and the extracellular fluids. These principles are the basic tenets of the phytosome strategy to improve the bioavailability of phenolics and have now been successfully applied to curcumin, a patented complex with phosphatidylcholine (Meriva®)."

The next study I am about to review gives the details about the improved bioavailability and efficacy of Meriva® compared to commercial curcumin. In "Comparative absorption of a standardized curcuminoid mixture and its lecithin formulation" by Cuomo et al (Cuomo J et al. *J Nat Prod*, Vol. 74, No. 4, pp. 664-9, April 2011) the authors discuss the results of a human study where a "standardized curcuminoid mixture" was compared to a "lecithin formulation (**Meriva)**" in a randomized, double-blind, crossover fashion. The results were the following:

"Total curcuminoid absorption was about 29-fold higher for Meriva than for its corresponding unformulated curcuminoid mixture, but only phase-2 metabolites could be detected, and plasma concentrations were still significantly lower than those required for the inhibition of most anti-inflammatory targets of curcumin."

Based on this quote, it may appear that, on the surface, even though Meriva is better absorbed compared to a standard curcumin preparation, the issue is largely moot since the amount absorbed still is not enough to have a legitimate clinical effect. However, please consider the following quote which points out that the curcumin metabolites that were absorbed have a much more potent anti-inflammatory effect than curcumin itself, creating a scenario where efficacy in terms of inflammation was attained at amounts much lower than what has conventionally been considered necessary:

"Remarkably, phospholipid formulation increased the absorption of demethoxylated curcuminoids much more than that of curcumin with significant differences in plasma curcuminoid profile between Meriva and its corresponding unformulated curcuminoid mixture. Thus, the major plasma curcuminoid after administration of Meriva was not curcumin, but demethoxycurcumin, a potent analogue in many in vitro anti-inflammatory studies."

From this data the authors conclude:

"The improved absorption, and possibly also a better plasma curcuminoid profile, might underlie the clinical efficacy of Meriva at doses significantly lower than unformulated curcuminoid mixtures."

Similar results were seen in an earlier animal study entitled "Comparison of systemic availability of curcumin with that of curcumin formulated with phosphatidylcholine" by Marczylo et al (Marczylo TH et al. *Cancer Chemother Pharmacol*, Vol. 60, No. 2, pp. 171-7, July 2007):

"The results suggest that curcumin formulated with phosphatidylcholine furnishes higher systemic levels of parent agent than unformulated curcumin."

What about efficacy in the clinical setting?

This question was addressed in the previously mentioned paper by Belcaro et al. that considered the impact of Meriva® administration with osteoarthritis patients. The quote below discusses the specific protocol used:

"The treatment consisted of two 500-mg tablets daily, one after breakfast and one after dinner (1000 mg/day, corresponding to 200 mg curcumin/day). The composition of the test material was a natural curcuminoid mixture (20%), phosphatidylcholine (40%), and microcrystalline cellulose (40%). The composition of the curcuminoid mixture was 75-percent curcumin, 15-percent

demethoxycurcumin, and 10-percent bisdemethoxycurcumin."

What were the results of the study? The authors state:

"In this trial, positive results were obtained for all end-points evaluated. Thus, after eight months of continuous use of 1 g/day Meriva, the WOMAC score for osteoarthritis (OA) symptoms decreased by more than 50 percent, while the treadmill test showed an overall three-fold increase in walking distance compared to the control group. The objective and subjective clinical outcomes were substantiated by interesting findings in the biochemical evaluation of inflammatory status and oxidative stress in patients in the treatment group. The significant decrease of all inflammatory markers measured suggests that the clinical improvements observed have a clear mechanistic basis that validates previous *in vitro* observations of curcumin on joint cells."

Thus, I hope you can see why I wanted to include Meriva® in **SarcoSelect™**. It truly has performed well in both laboratory and clinical studies.

Another interesting paper on Meriva® in relation to the side effects of cancer chemotherapy and radiotherapy

Another powerful statement concerning the clinical efficacy of Meriva® came from a paper that examined the impact of Meriva® on patients who experience often difficult to manage inflammation-induced issues – side effects from chemotherapy and radiotherapy. In "A controlled study of a lecithinized delivery system of curcumin (Meriva®) to alleviate the adverse effects of cancer treatment" by Belcaro et al (Belcaro G et al. *Phytother Res*, published online ahead of print 2013) the authors evaluated the clinical impact of Meriva® by providing Meriva® to cancer patients who had undergone surgery and would be receiving either chemotherapy or radiotherapy. Specifically, in both the chemotherapy and radiotherapy groups 40 patients were included in the active treatment group receiving Meriva® and 40 patients acted as controls. Each patient in the active groups received one 500 mg Meriva® tablet per day. The time sequence was as follows:

"The observational framework study lasted 4 months, starting from the day after their first cycle of chemotherapy or radiotherapy. Meriva was used between the 4th and 16th weeks from surgery, for at least 60 consecutive days."

In discussing the results of their study, Belcaro et al first provide an overview of the metabolic nature of side effects of chemotherapy and radiotherapy:

"The side effects of radiotherapy and chemotherapy are often related in a predictable and specific way to the mechanism of action of the treatment. On the other hand, they also depend on a number of extremely diverse and interconnecting variables that include the presence/absence of residual tumours, infections, inflammation, haaematocrit, and the basic status of the subjects (age, sex). Notwithstanding these issues, the release of active or necrotic elements, mainly tumour necrosis factor, and an increase in the plasma oxidative status are generalized in cancer patients under non-surgical treatment."

What were the results of the study? The authors comment:

"At the outset of the treatment, the quality of life of patients was acceptable, with a score on the Karnofsky scale of at least 70, as expected in chemo- and radiotherapy-naïve patients soon after surgical treatment of their malignancy. A consistent improvement of the side-effect profile was observed in the treatment groups from both chemo- and radiotherapy."

Were similar positive findings noted concerning laboratory analyses? Belcaro et al state:

"The subjective end-points considered in this study were complemented by a biochemical end point (investigation of the plasma oxidative status). As expected from the antioxidant action of curcumin, the plasma oxidative status was consistently improved in all patients supplemented with Meriva."

In the opinion of the authors, why was Meriva so effective? Three reasons. First, as I

mentioned before, it has better bioavailability compared to standard curcumin preparations:

"…we have focused on a lecithinized formulation of curcumin (Meriva) that shows an improved absorption compared to the natural product (ca. six fold on weight basis and 30-fold on molar basis)…"

However, the second reason does relate to the inherent biochemical power of curcumin in general:

"Curcumin behaves as a veritable master switch of inflammatory and anti-oxidant responses, inhibiting inflammatory enzymes and their expression, and upregulating anti-oxidant defenses. This broad mechanism of action suggests that curcumin could mitigate the inflammatory and oxidative phenotype associate to cancer treatment by both chemo- and radiotherapy."

The last reason relates to the safety and lack of side effects that has been noted with curcumin. Belcaro et al point out:

"At the low dosages (300 mg curcumin as Meriva) used in the study, it seems therefore reasonable to assume that curcumin is essentially devoid of side effects, and that all the discomfort recorded in patients' diaries was related to the cancer treatment regime (chemo- or radiotherapy)."

In the final paragraph of the paper, the authors point out the significance of the study:

"…it provides a first clinical evidence that this compound, when suitably formulated to overcome its poor oral absorption, can indeed have an interesting potential for lowering the burden of side effects associated to cancer therapy, with an overall improvement of the quality of life that might translate into a better compliance with the treatment and, potentially, into an overall improved survival rate."

Other key constituents of SarcoSelect

In closing this overview of **SarcoSelect™** on why we are so confident that it can make a difference in your patients who are experiencing suboptimal muscle mass and muscle function, I would like to provide a brief listing of some other key constituents that we feel are most important:

- **Folate as Quatrefolic® (6S)-5-Methyltetrahydrofolic acid**
- **Methylcobalamin**
- **Albion® chelates of the following minerals: calcium, magnesium, zinc, selenium, manganese, chromium, molybdenum, and potassium.**
- **Tapioca maltodextrin (non-GMO)**
- **Medium chain triglycerides**
- **Coconut oil**
- **Mixed tocopherols providing 6 mg of gamma-tocopherol**

Thanks so much for your consideration of **SarcoSelect™** as a foundational product for the many patients who are experiencing suboptimal muscle mass and function and the signs and symptoms that are related.

For further information about **SarcoSelect™**, ask for our **SarcoSelect™ Information Packet**, which includes print copies of Dr. Moss's newsletters on the clinical implications of loss of muscle mass, a list of the studies, and a **SarcoSelect™** technical sheet. To view online, go to: www.mossnutrition.com/musclemass (You will need to log-in to follow the links).

We look forward to your feedback and input.

SarcoSelect™ - Moss Nutrition Select

Contents: 585 g (1.29 lbs)