SELECT WHEY® – SOME THOUGHTS ON WHY WHEY PROTEIN CONTINUES TO BE CLINICALLY IMPORTANT

Certainly, a legitimate concern about whey protein supplementation is allergenicity. However, while this concern is warranted, I feel it is still important to realize that cow’s milk protein allergy is rare. As noted by Pereira in “Milk nutritional composition and its role in human health” (Pereira PC. Nutrition, Vol. 30, pp. 619-627, 2014), cow’s milk protein allergy incidence varies between 2% and 7.5%. Why do I mention this? It is my opinion that concerns about allergenicity sometimes lead us to forget how useful whey protein supplementation can be in addressing some of the most common and vexing clinical concerns presented by many, if not most, patients.

Of course, as with virtually every nutritional supplement available to today, quality is an essential component when considering efficacy. As noted in the enclosed technical bulletin, the Moss Nutrition Professional Line product, Select Whey®, which is available in vanilla, chocolate, and unflavored forms, uses the ProSerum™ whey concentrate product from the company, Well Wisdom. As also noted in the enclosed technical bulletin, ProSerum™ is regarded as one of the finest, if not the finest, whey protein concentrate available.

As we all know, though, quality does not always translate into efficacy. Therefore, I would now like to discuss three papers that demonstrate just how clinically useful and safe a quality whey protein concentrate product can be with the types of patients typically seen in a clinical nutrition practice.

Weight loss

As we all know, the most common request received from patients in the usual nutritional practice is to lose weight. However, for the growing number of patients in our practices who are middle-aged or older, accomplishing healthy weight loss presents some unique challenges. In particular, as you will see in my review of the paper “A high whey protein-, leucine-, and vitamin D-enriched supplement preserves muscle mass during intentional weight loss in obese older adults: a double-blind randomized controlled trial” by Verreijen et al (Verreijen AM et al. Am J Clin Nutr, Vol. 101, pp. 279-286, 2015, a major challenge is potential loss of quality of life as weight is being lost. Why would quality of life decrease as weight loss increases? In older individuals, particularly for those who employ a reduction in caloric intake as part of the weight loss program, the weight loss is often accompanied by significant loss of muscle mass. In the quote below, Verreijen et al discuss the fact that loss of muscle mass when attempting weight loss in older individuals is a major concern:

“…a potential drawback of weight loss in older adults is the accompanying loss of skeletal muscle mass, which eventually may accelerate the development of sarcopenia. Reduction in muscle mass and strength impairs physical function and activities of daily living and is associated with an increased risk of falling and physical disabilities. Thus, although obese older adults may benefit from weight loss, therapy should focus on minimizing loss of muscle mass to preserve independence and quality of life.”

Using a high quality whey protein such as the ProSerum™ used in Select Whey® with older patients desiring to lose weight can be very
helpful in preventing loss of muscle mass. Verreijen et al state:

“Whey protein is a high-quality protein that has shown superiority in enhancing muscle protein synthesis compared with other protein sources in older adults. This effect of whey is likely attributed to the faster digestion and absorption and the high content of essential amino acids, including leucine.”

In addition, as suggested in the title of the study, adding extra leucine to the whey protein powder can provide increased benefit:

“Leucine is a powerful stimulator of muscle protein synthesis, and it was recently shown that leucine coingestion with a bolus of protein could further improve muscle protein synthesis.”

Moss Nutrition provides isolated leucine powder that can be added to Select Whey® in the product Leucine Powder.

With the above in mind, Verreijen et al conducted a study on 80 obese men and women aged 55 years and older using a whey product fortified with leucine powder and 800 IU of vitamin D per serving (Vitamin D in the Moss Nutrition Professional Line can be found in several different forms). The total content of leucine from both the whey protein and the added leucine was 2.8 g per serving.

Concerning caloric intake:

“All subjects followed a hypocaloric diet of 600 kcal below estimated energy needs according to the Dutch guideline.”

In addition:

“This hypocaloric advice included the caloric content of 1 serving of the study products. The second serving, given only after training sessions, was provided in addition to the daily diet.”

The training sessions consisted of resistance exercise.

What were the results? Verreijen et al state:

“This trial is the first to show that use of a high whey protein-, leucine-, and vitamin D-enriched supplement preserves muscle mass during intentional weight loss by a hypocaloric diet combined with resistance exercise in obese older adults.”

Why was the experiment successful? One reason, as stated below by the authors, is that the generally accepted RDA for protein, 0.8 g per kilogram body weight per day, is way too low for older individuals attempting to lose weight by reducing caloric intake:

“At present, the Recommended Dietary Allowance for protein is 0.8 g/kg for all adults. Current expert opinion on protein requirements in the older adult or elderly population ranges from 1.0-1.2 g protein per kilogram body weight per day. This implies that the intake of 0.8 g per kilogram body weight per day during a hypocaloric diet is too low for maintenance of body protein mass. For overweight adults, it has been shown that preservation of fat-free mass was more effective with a high-protein diet (1.2 g per kilogram body weight per day) compared with a normal-protein diet (0.8 g per kilogram body weight per day).”

Why do older adults need more protein? Verreijen et al state:

“Several recent studies indicate that older adults are muscle anabolic resistant, which implies a blunted postprandial response to the anabolic stimuli from protein or amino acids compared with young adults. However, providing older adults with a sufficient amount of protein or amino acid equivalent could still stimulate muscle protein synthesis.”

Was the fact that the increased protein intake involved whey protein a crucial aspect of the positive results noted? The authors note:

“It has been shown that 20 g of whey protein is more effective in stimulating postprandial muscle protein accretion than casein, casein hydrolysate, or soy protein in older men. The whey-stimulating effects on muscle protein synthesis have been ascribed to its fast digestion, delivering amino acids in the circulation available for protein synthesis and its high content of leucine, which is considered the most potent amino acid to stimulate muscle protein synthesis. The effect of leucine was corroborated by Wall et al., showing that leucine coingestion with protein
could further improve muscle protein synthesis in older adults.”

What about the vitamin D in terms of muscle mass? Verreijen et al point out:

“The intervention supplement used in this study also contained 800 IU vitamin D. A low vitamin D status has been associated with impaired muscle mass and function in older adults and vitamin D has also been suggested to have a positive impact on muscle protein metabolism.”

With the above in mind, the authors conclude:

“In conclusion, a high whey protein-, leucine-, and vitamin D-enriched supplement compared with an isocaloric control supplement as part of an intentional weight loss program, including a hypocaloric diet and resistance exercise, preserves skeletal muscle mass in obese older adults. These findings support the current advice to increase protein intake of high quality and sufficient quantity during a weight loss program in obese older adults to aid in prevention of weight loss-induced sarcopenia.”

Inflammation

As we all know, an ever increasing volume of research is making it clear that the common currency of virtually every chronic illness is chronic inflammation. Because of this, reduction of inflammation has become a top priority for every nutritional practitioner. How effective is whey protein in this regard? The recently published study “Effect of whey supplementation on circulating C-reactive protein: A meta-analysis of randomized controlled trials” by Zhou et al (Zhou LM et al. *Nutrients*, Vol. 7, pp. 1131-1143, 2015) answers this question by considering the impact of whey protein ingestion on one of the most commonly measured indicators of chronic inflammation in routine clinical practice, C-reactive protein (CRP).

What were the results of the study? As you might expect, whey protein supplementation had no impact on those individuals who did not demonstrate elevated CRP levels. However, for those who did, higher doses of whey protein were quite beneficial. Specifically, what dose of whey protein demonstrated optimal results? Zhou et al state:

“We found that CRP reduction was more pronounced when whey supplementation was ≥20 g/day, suggesting that whey quantity is an important factor affecting CRP responses.”

When using Select Whey®, one scoop will provide approximately 22 g protein.

As was mentioned above, whey protein supplementation was most successful in reducing CRP when CRP was elevated. What level of CRP do the authors regard as elevated?

“Subgroup analysis results also indicated a significantly larger reduction of CRP in subjects with increased CRP (≥3 mg/L) at baseline.”

Why is efficacy at or above 3 mg/L important? The authors note:

“This result is important, because more than 3 mg/L of CRP results in a high risk of future CVD events. A decrease in CRP is also helpful to alleviate type 2 diabetes mellitus, because the CRP level is positively associated with type 2 diabetes mellitus incidence. Obesity, which is an established risk factor for CVD and type 2 diabetes mellitus, has been associated with elevated levels of CRP. Thus, our finding is useful, because intervention could be effective in individuals who most needed this treatment.”

Why is whey protein so effective in reducing inflammation? Zhou et al suggest one reason is the fact that whey protein is high in the amino acid cysteine, a key factor found in glutathione:

“Whey protein is rich in cysteine, which can increase the synthesis of glutathione, a crucial intracellular antioxidant.”

Will doses of whey protein above the RDA have an adverse impact on bone health and/or renal function?

Traditionally, one of the arguments against concentrated protein supplementation that increases daily protein intake above the traditional RDA of 0.8 g per kilogram body weight per day has been concerns about an
adverse impact on bone health and renal function. Is this concern warranted in older individuals who, as mentioned above, need additional protein due to anabolic resistance? This question was answered in the study “The effect of a whey protein supplement on bone mass in older Caucasian adults” by Kerstetter et al (Kerstetter JE et al. J Clin Endocrinol Metab, Vol. 100, No. 6, pp. 2214-2222, June 2015).

In this study, the following individuals were evaluated:

“Two hundred eight older women and men with a lean body mass index between 19 and 32 kg/m² and a self-reported protein intake between 0.6 and 1.0 g/kg participated in the study.”

The intervention consisted of the following:

“Subjects were asked to incorporate either 45-g whey protein or isocaloric maltodextrin supplement into their usual diet for 18 months.”

What were the results? Kerstetter et al point out:

“In this study whey protein supplementation in older men and women with adequate dietary protein intakes had no effect on bone mineral density assessed by DXA. There were also no significant differences in quantitative computed tomography measurements at the lumbar spine (a site rich in trabecular bone) or at the femoral neck (a cortically enriched site).”

What about renal function?

“The estimated glomerular filtration rate remained within normal limits throughout the entire study.”

Furthermore, it should be stated that, in addition to no adverse findings with the whey protein supplementation, there were very positive findings concerning lean body mass:

“…total lean body mass was preserved, and truncal fat-free mass was significantly higher in individuals receiving a whey protein supplement.”

Some final thoughts

I realize that there has been some legitimate concern about allergenicity of whey protein supplements. However, given the low incidence, as pointed out above, I do wonder if too many in the clinical nutrition community are losing more than they are gaining when the decision is made to avoid all whey protein supplementation in all patients. For, the research I have just reviewed above adds to the massive body research performed over the last 10-20 years that makes it clear, for many of the types of patients and patient complaints coming our way, the high quality whey protein (ProSerum™) found in the Select Whey® products can make a major contribution to resolution of chief complaints and improvements in quality of life.

Products mentioned in this newsletter:
Select Whey® Chocolate 1140 g
Select Whey® Unflavored 900 g
Select Whey® Vanilla 945 g
Leucine Powder 65 g – Moss Nutrition
Vitamin D 1000 IU 90 VC
Vitamin D 2000 IU 90 VC
Vitamin D 5000 IU 90 VC

Please review the enclosed Tech Sheet on Select Whey®. Give us a call or go to our website to learn more about these products.

Making Protein Smoothies with Gina!
Watch Gina Fasser, M.S. share helpful tips as she prepares fresh fruit + protein shakes for her children! Download a Smoothie Recipes sheet! Go to www.mossnutrition.com/protein – you will also see additional resources pertaining to protein and whey at this web page.