

THE PALEO DIET

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WHEY PROTEIN



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FOLLOW-UP

SPROUTED
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CARB LOVER'S
CAULIFLOWER

LOREN CORDAIN, PH.D.



Q & A: WHEY PROTEIN

Q: Could you please provide some details on the benefits/detriments of whey protein supplementation? I am a weight trainer/powerlifter and supplement with whey protein, which is currently touted as the best/most health-conscious choice there is. I have read in your newsletter about the inflammatory aspects of dairy products - is whey protein included in this? Is it better or worse than other dairy products?

Many people interested in the Paleo Diet who are also into strength training and fitness would be interested in your thoughts on this. Any pointers re: inflammation and supplementation of protein would be very well received. Thank you, in advance.

Best regards,
Karl

A: Dear Karl,

Unfortunately, at this point, most of the research has focused on the beneficial effects of whey. It basically revolves around whey's high BCAA content, its use as a post-workout recovery drink ingredient, and its capacity – due to cysteine – to increase Glutathione, a powerful endogenous antioxidant enzyme.

Nevertheless, we believe that whey protein can have some potential adverse effects, because it greatly elevates insulinemia - although it can be therapeutic for diabetics in the short term. We suspect that whey protein could be detrimental long term, as hyperinsulinemia can down-regulate the insulin receptor and lead to insulin resistance. Insulin

resistance underlies the Metabolic Syndrome, and is implicated in various other diseases, such as Acne, Alzheimer, various cancers, Coronary Heart Disease, Myopia, PCOS, etc.).

But to be completely sure, we would need intervention studies with whey protein with a relatively long duration in people genetically prone to insulin resistance, or who are in fact insulin resistant.

Also, there is the matter of hormones in milk: estrogens, DHT precursors, Insulin, IGF-1 and the hormone Betacellulin (BTC), which Dr. Cordain has discussed in a previous edition of this newsletter. These are some of the possible mechanisms for which there is repeated epidemiological evidence associating milk consumption with some cancers - especially Prostate Cancer. We know that these hormones are present in milk and - in the case of BTC - it is present in whey too. Nevertheless, the real content of all these hormones in commercial milk-derived products is an open question that deserves proper and urgent study. So while we don't know for sure, and since we have alternatives, I would follow the old saying: do no harm!

Finally, if you have an auto-immune disease or allergy to Beta Lacto Globulin (protein that exists in bovine milk, but nonexistent in human milk) I would stay away from whey. Whey contains not only Beta Lacto Globulin, but also Bovine Serum Albumin. Some peptides from this protein have structural homology with peptides from our own tissues, and BSA has been implicated in Multiple Sclerosis, Rheumatoid Arthritis and Type 1 Diabetes.

In conclusion, I would follow the evolutionary template until all these issues are resolved. which states that recently introduced foods may have potential adverse

effects to humans, especially long term. Non-human milk was only introduced in the human diet ~10,000 years ago. Therefore, given the potential health hazards of milk that science is revealing, I would use another protein source. Lean meat and seafood are very good sources of BCAA. If you want a protein drink immediately after strength training to speed recovery and increase muscle mass, I would suggest ~9 grams of essential amino acids, along with a banana.

I hope this helps.

Cordially,

Pedro Bastos, MA MS Ph.D.

Q & A: CHIA SEEDS FOLLOW-UP

Q: Loren,

Hope all is well with you and your work!

After reading your article on chia seeds, I forwarded the article to Dr. Vlad Vuksan in Canada, one of the leading researchers/promoters of Salba Seeds. After he got your article, he seemed to object that your conclusions apply uniquely to chia seeds generically, but not to Salba Seeds (single variety).

Is such a distinction valid? Wouldn't your conclusions regarding chia seeds apply as well to Salba, a variety of chia?

Thanks for your insights,

Frank

A: Hi Frank,

I stand by my conclusions in the newsletter. Until further human trials are completed employing a sample size with sufficient statistical power to resolve these immune system issues, then the potential adverse effects of long term, chronic chia seed consumption may outweigh the potential benefits. I respect Dr. Vukan's long time collaborative work with David Jenkins at the University of Toronto, particularly in regard to their pioneering work on the glycemic index. I have read both of Dr. Vukan's recent chia seed papers,^{1,2} and in neither one do the authors make any distinction between generic *Salvia hispanica* L. and the trade name (Salba) version of the seed they employed in their two studies. Hence, unless Dr. Vukan and colleagues can show otherwise, the literature results I have uncovered remain unchanged and apply to both Salba and *Salvia hispanica* L. It should be noted that at least two of the subjects in Dr. Vukan's first study² refused to continue because of gastrointestinal side effects.

In regard to Dr. Vukan's first chia study, Table 1 shows a non-significant decrease (7.0 %) in the treatment group's CRP and a 32.9 % increase in the control group value. The authors interpret this bi-directional group change in the abstract and elsewhere as a significant reduction (40 + 1.6 % p < 0.04) in CRP. This kind of data reporting is misleading when the treatment group mean change was actually non-significant. Despite ANCOVA adjustment for age, gender and sequence in their repeated measures model, their interpretation of the CRP data is at best misleading but likely incorrect.



An additional shortcoming in this study involves the reporting of ALA and EPA data (results p. 280).⁶ Why weren't the actual plasma concentrations (mean + SD) of both of these fatty acids reported in both the experimental and control group? Given that 2% or less of ALA is chain elongated and desaturated into DHA, the EPA data need further scrutiny. Did the reported % differences for ALA and EPA represent within group differences or factorial differences? These shortcomings potentially invalidate the conclusions of the paper that CRP was reduced. In contrast, Nieman and colleagues³ were unable to replicate Dr. Vukan and colleague's results in a similar study with a much larger sample size and hence greater statistical power.

Cordially,

Loren Cordain, Ph.D., Professor Emeritus

For sources see References: Section I

Q & A: SPROUTED LEGUMES

Maelán Fontes, MS Ph.D.

Q: Hi, the Paleo Diet makes a lot of sense to me and I very much appreciate the research that's gone into it. However, am I right in thinking that any diet we are adapted to may nevertheless not be an ideal diet? We adapted to a diet that enabled us to be healthy enough to live long enough to reproduce healthy enough offspring.

If I understand correctly, couldn't certain foods could make that basic diet even healthier? For example, I have The Paleo Diet for Athletes out from the library right now and I see that you believe that the life of an athlete requires departure from a strict paleolithic diet. Couldn't properly treated grains and legumes be beneficial additions to the diet? (i.e. soaked/

sprouted to reduce/eliminate anti-nutrients?)

I am waiting to receive The Paleo Diet from the library (I'm on a long waiting list, which is good news I guess!) so maybe you address this issue in the book, in which case, I apologise. But if not, I would appreciate knowing your views on soaking/sprouting grains and legumes, and the reasons behind those views.

Thanks so much,

Zena

A: Dear Zena, first of all - thanks for supporting our work.

Lectins, one of the known antinutrients in cereal grains and legumes¹, have been demonstrated to exert several deleterious effects upon human physiology,¹ (especially for those with autoimmune diseases) by increasing intestinal permeability.² Their function is to protect the plant against attacks by plant-eating animals by using several toxic substances, such as lectins.³ There is a growing body of evidence showing that both the root and the sprout of wheat kernels have significant amounts of wheat germ agglutinin (WGA), one of the most studied lectins. Indeed, WGA originates in the wheat kernel, especially during germination and growth,⁴ and the highest concentrations are found in young plant roots, seeds, and sprouts.

Lectins are resistant to digestive enzymes, and are found intact in peripheral circulation, as shown by Wang et al (1998).⁵ Furthermore, they are deposited in the internal organs.⁶

As stated by Pusztai et al,⁷ lectins are heat stable, and normal cooking does not completely eliminate these toxic compounds unless they are pressur cooked.⁸⁻¹¹

The best way to reduce lectins' adverse health effects is to limit their intake.

In addition, saponins - another type of toxic/antinutritive compound - exist in legume sprouts. Saponins have been shown to affect the gut barrier and by extension immune system function.¹² They may also increase the risk of autoimmune diseases in genetically susceptible individuals.¹³ Soaking, sprouting or cooking legumes, does not reduce their saponin content.^{14, 15}

In addition, a peptide fraction from gluten proteins called gliadin is found in wheat. Gliadin is resistant to digestive enzyme degradation,¹⁶ arrives intact when it comes into contact with intestinal epithelial cells¹⁷ and increases intestinal permeability. Increased intestinal permeability may be at the root of autoimmune diseases such as Celiac Disease and Type 1 Diabetes.¹³

Phytate, the main form of phosphorus storage in many plants (especially bran and seeds) is classified as an antinutrient because it is a chelator of iron, magnesium, calcium and zinc.¹ Phytate ingestion inhibits the intestinal absorption of those minerals. Phosphorus from phytate is unavailable to humans, as we do not produce the phytase enzyme necessary to break down phytate - unlike ruminants, who do produce phytase, and are able to digest phytate.¹⁸ Yeast fermentation in bread reduces phytate content.¹⁹ Furthermore, addition of ascorbic acid counteracts the inhibitory

effects of phytate upon iron absorption.²⁰ Soaking and fermentation reduces the phytate content of grains and legumes as indicated in several studies.^{21, 22, 23, 24}

Having said that, Dr. Cordain in his first book talks about the 85:15 rule, where he explains that 85% of caloric intake from modern paleolithic-like foods is still more healthy than the typical western diet, where more than 70% of caloric intake comes from foods introduced in the human food chain after the agricultural revolution.²⁵

The bottom line is that our metabolism is perfectly adapted to the nutrition that shaped our genome during million of years of evolution. Therefore, any nutrient introduced after the agricultural revolution may not be compatible with our ancient genome. We believe that anyone engaged in athletic activities could do very well on a diet based on 85% paleolithic nutrients, which are preferable to the nutrients found in the typical western diet.

I hope this is helpful.

Maelán Fontes, MS Ph.D.

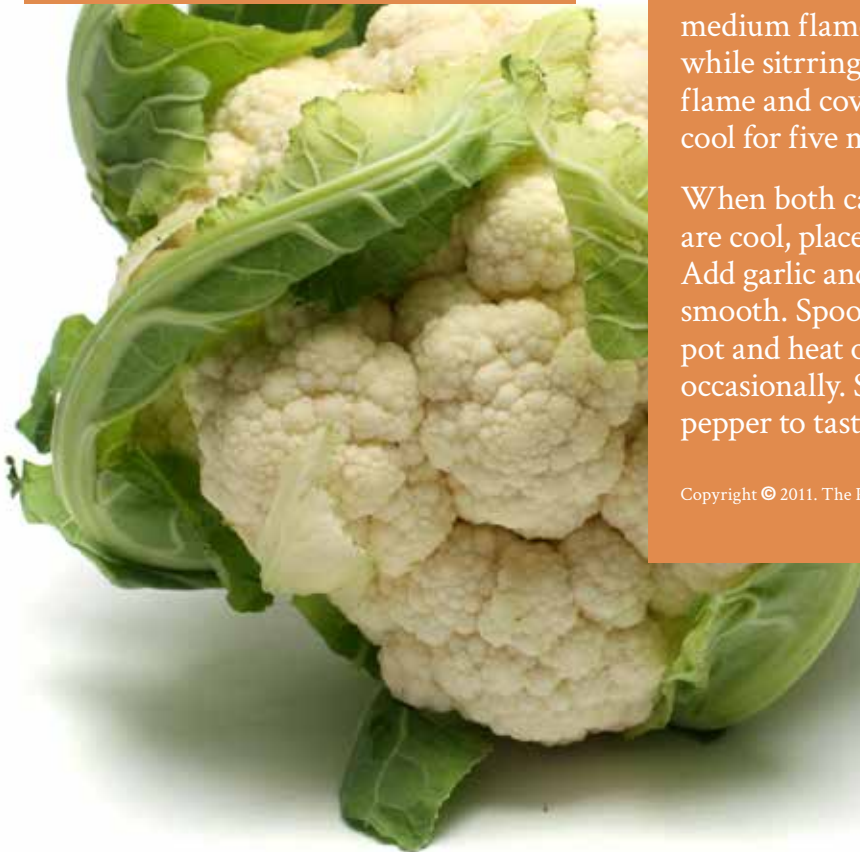
For sources see References: Section II



PRIMAL IN THE KITCHEN

CARB LOVER'S CAULIFLOWER

2 cups cauliflower florets
1 large zucchini, sliced into
1-inch rounds
2 tablespoons extra virgin olive
oil
6 garlic cloves, diced
1/2 cup chicken broth (made
paleo)
2 Tb. minced fresh chives
Freshly ground black pepper to
taste



Fill a 2-quart pot with one inch of water and insert steamer basket. Bring water to a boil. Add cauliflower and steam until tender, about ten minutes. Remove cauliflower and set aside to cool. Add zucchini rounds to pot and steam until soft, about ten minutes.

Heat oil in a cast iron skillet over medium flame. Add garlic and cook while stirring for five minutes. Turn off flame and cover. Drain zucchini and let cool for five minutes.

When both cauliflower and zucchini are cool, place in blender and add broth. Add garlic and oil mixture puree until smooth. Spoon entire mixture back into pot and heat over low flame, stirring occasionally. Sprinkle with chives and pepper to taste.

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