

On-the-Go Weight Loss: Nutritional Considerations

John Maher, DC, DCBCN, BCIM

"There is an urgent need for [effective tools to prevent weight gain in the population at large](#) and weight regain in overweight persons after weight loss. In theory the solution is simple, but implementation will continue to be difficult and ineffective as long as we maintain the view that just telling people that they should eat less and exercise more does the job."³

The spreading "obesity epidemic," even among our children, is well known to all chiropractors.^{1,2} There is also an increasing list of weight-loss diets. In any diet, there are varying degrees in difficulty and in compliance. Let's discuss some ideas on how to support compliance.

Specifically, I want to encourage the use of nutrient-dense foods and ingredients to make quick and easy weight loss on-the-go meals that will fit into almost any diet scheme. The recipes need to be nutrient dense, including phytonutrients, zoonutrients and omega-3 EFAs; be enjoyable, filling and satisfying; provide long-lasting energy and satiation; be quick and easy to make; and fit into most any dietary approach.

Satiating Power of Protein

"Many popular diets recommend 30% to 40% protein content, at the expense of carbohydrate, over and above the usual 10-20% protein recommendation. [Newer research indicates that the high-protein content of these diets may actually be the reason for their partial success in inducing weight loss, despite no restrictions in total calories.](#)"³

Scientists have stated that research subjects felt more satiated with an isocaloric high-protein diet than with a weight-maintenance diet.⁴ Of note in relation to metabolic syndrome (Syndrome X), high-protein diets, independent of the loss of total body fat, resulted in a significant loss of visceral fat.⁵

We do not yet have consensus agreement on how protein increases satiety. This effect could not be explained by changes in the hunger hormone ghrelin or the satiety hormone leptin.⁶ However, that does not prevent us from using that knowledge. The guidelines from the Institute of Medicine allow for the inclusion of higher amounts of protein than previously recommended.⁷ The institute concluded that there is no clear evidence that a high protein intake increases the risk of renal stones, osteoporosis, cancer or cardiovascular disease.

Perhaps the protein with the best features is whey protein. First, [whey has an excellent value, efficiency, utilization and digestibility profile.](#)⁸ Whey is a complete and balanced protein and, as such, is a good source of the amino acid tryptophan, supplying about 2.4 g/100 g. Low-calorie, low-protein diets may not supply enough of this essential amino acid. Tryptophan is the precursor to serotonin, an important neurotransmitter that helps regulate mood, sleep and appetite, especially

as relates to carbohydrates. Also, if niacin intake is insufficient, the body will convert tryptophan to niacin, needing 60 mg of the former to make 1 mg of the latter. Typically, most people consume 1,000 to 1,500 mg of tryptophan a day.⁹ Diets low in tryptophan are not likely to succeed in the long term.

Comparison of Protein Sources									
	BV	PER	NPU	PDCAAS		BV	PER	NPU	PDCAAS
Whole Egg	100	3.8	94	1.18	Beef	80	2.9	73	.92
Whey Protein	104	3.2	92	1.15	Casein	77	2.5	76	1.23
Cow's milk	91	3.1	82	1.21	Soy Protein	61	2.1	61	.91

Biological Value (BV), Protein Efficiency Ratio (PER), Net Protein Utilization (NPU), and Protein Digestibility Corrected Amino-Acid Score (PDCAAS)

Whey protein provides more branched-chain amino acids (L-isoleucine, L-leucine and L-valine) than any other protein source. Branched-chain amino acids (BCAAs) are unique in that they are metabolized for energy by muscle, rather than by the liver. BCAAs thereby both spare lean muscle mass in weight-management programs and reduce the role of insulin in blood glucose control.¹⁰

Another component of whey, glycomacropeptide (GMP), appears to have a role in appetite suppression. GMP has been shown to stimulate the intestinal hormone cholecystokinin (CCK), which inhibits gastric emptying and secretions, and also induces satiety. Admittedly, human trials have been limited, but studies have demonstrated that consumption of whey protein enriched with GMP reduced hunger and subsequent meal intake.^{11,12}

Whey protein also confers significant angiotensin-converting enzyme (ACE) activity. Recent data demonstrate adipocyte lipogenesis is regulated in part by angiotensin II. Perhaps most importantly, as it relates to comorbidity in obesity and the oft-related diabetes and metabolic syndrome, ACE appears to have significant hypotensive effects.^{13,14}

Carbohydrates

The most popular weight-loss diets today tend to de-emphasize carbohydrates, especially those that have a high glycemic index (GI). High-GI foods tend to promote large insulin fluctuations, perhaps eventually leading to insulin resistance, metabolic syndrome and diabetes. Dysglycemias are usually associated with weight gain, increased deep belly fat and resultant central adiposity.

High-protein foods tend to be low in carbohydrates and therefore have a low GI index. Whey protein isolates (>90 percent protein) have a glycemic index of less than one.¹⁵ Whey protein isolate is also extremely lean, being low in fat and cholesterol. Unlike meats or eggs, whey protein is never fried, broiled or barbecued, and therefore does not promote the formation of advanced glycation endproducts, a major contributor to the development of the common diseases of aging.

Low-carbohydrate vegetables are strongly recommended in most dietary strategies. They provide fiber, vitamins, minerals, phytonutrients and lots of chewing. In the more restricted carbohydrate routines, many fruits are severely limited because of their sugar content. As the unique nutrients in fruits and vegetables are so beneficial to health, high-phytonutrient fruit and vegetable liquid concentrates and drink mix powders are often recommended for those who do not consume optimal amounts, or desire the nutrients without the carbohydrates.

Fats

Even though fats have over twice the calories per gram as protein or carbohydrates, the highest satiating power is found with high levels of protein, dietary fiber and water. Low satiating power is related to higher fat foods.^{16,17} Still, it is most important to have sufficient essential fatty acid intake, both [omega-3](#) and [omega-6](#).^{18,19} Omega 3 is usually the most limited. Fatty fish and flax seed are the richest, most common sources, though high-omega chia seeds and foods fortified with DHA have recently become more available.

Fiber

According to a report in the *Journal of Nutrition*, "Dietary fiber has many functions in diet, one of which may be to aid in energy intake control and reduced risk for development of obesity. The role of dietary fiber in energy intake regulation and obesity development is related to its unique physical and chemical properties that aid in early signals of satiation and enhanced or prolonged signals of satiety. Early signals of satiation may be induced through cephalic- and gastric-phase responses related to the bulking effects of dietary fiber on energy density and palatability, whereas the viscosity-producing effects of certain fibers may enhance satiety through intestinal-phase events related to modified gastrointestinal function and subsequent delay in fat absorption."²⁰ Clearly, sufficient soluble and insoluble fiber are important factors in weight-loss diets.

Stevia, Lecithin, Green Tea and Water

Stevia (*Stevia rebaudiana*) extracts are used as natural sweeteners or dietary supplements for their stevioside or rebaudioside A compounds. These compounds possess up to 250 times the sweetness of sucrose. They are noncaloric and noncariogenic.²¹ In addition, [stevia has the ability to lower high blood sugar and blood pressure](#).²² High-quality stevia, without the bitter aftertaste, is available.

Lecithin is a common component of drink powders that makes them mix better. [It also appears to have a satiating effect, in part likely related to CCK stimulation](#).²³

Green tea may enhance fat burning due to its caffeine and catechin polyphenol content.²⁴ It is likely that several tea bags would be needed to optimize potential effects. The theanine has a calming effect, which tends to tone down some of the jitters experienced from other forms of caffeine.²⁵

According to German research, water consumption increases the rate at which people burn calories. The impact is modest and the findings are preliminary, but the findings could have important implications for weight-control programs.²⁶

Weight Loss on the Go

The basic building blocks of a weight-loss recipe are protein, fiber and essential fatty acids. If fruits and/or vegetables are limited, add a fruit/vegetable concentrate liquid or powder. An example might be 15 g of vanilla-flavored whey powder with fiber (sweetened with stevia), ground flax seed (10 g) and one scoop (8 g) of a fruit phytonutrient liquid concentrate with fiber, added to 10 to 12 ounces of strong green tea, followed by an extra glass of water if not full. This hypothetical recipe would provide about 17 g protein, 4 g fiber, 5 net carbs, 3 g fat (mostly omega-3) in just 150 calories. Some diet plans less restricted in carbohydrates or calories might allow half the water or green tea to be replaced by orange juice or dairy, soy, rice or almond milk. One-quarter cup berries

may be added. Diets of 1,200 calories or less need usually require multivitamin/mineral supplementation.

When to Take?

Although most Americans agree in the importance of consuming breakfast, [the majority of consumers say they do not have the time for it, according to a survey conducted by Impulse Research Service](#).²⁷ Busy schedules and an increasingly fast-paced lifestyle have meant that Americans increasingly miss out on this meal.

A study in the *Journal of the American Dietetic Association* found that breakfast consumption may be associated with healthier body weights in children and adolescents. Skipping breakfast is common in overweight or obese children. The review authors wrote, "[To maximize the potential benefits of breakfast consumption, it is important to distinguish between simply promoting breakfast versus the consumption of a healthful breakfast ... Breakfast should include a variety of healthful foods that are high in nutritive value yet do not provide excess energy.](#)"²⁸

For most patients, breakfast is the best time to use these weight loss on-the-go meals as they are easy to prepare and consume. If it is helpful, a second meal either in mid-afternoon, an hour before dinner or as a late-night snack are also good.

I presume that most of you reading this article are not heavily involved in providing detailed weight-loss programs for your patients. Nonetheless, it is likely many are on a weight-loss diet of some kind. Sharing with them some version of this meal plan may assist their compliance while providing many potential health benefits.

The best business promotion for those of us who are overweight is to use this weight-loss solution to lose those extra pounds ourselves. Trust me, your patients will notice. They will ask, "How did you do it?"

References

1. www.cdc.gov/nccdphp/dnpa/obesity/trend/maps.
2. Cox ER, Halloran DR, Homan SM, et al. Trends in the prevalence of chronic medication use in children: 2002-2005. *Pediatrics* 2008;122(5):e1053.
3. Astrup A, Meinert Larsen T, Harper A. [Atkins and other low-carbohydrate diets: hoax or an effective tool for weight loss?](#) *Lancet* 2004;364:897-9.
4. Weigle DS, Breen PA, Matthys CC, et al. A high-protein diet induces sustained reductions in appetite, ad libitum caloric intake, and body weight despite compensatory changes in diurnal plasma leptin and ghrelin concentrations. *Am J Clin Nutr* 2005;82:41-8.
5. Due A, Toubro S, Skov AR, Astrup A. Effect of normal-fat diets, either medium or high in protein, on body weight in overweight subjects: a randomised 1-year trial. *Int J Obes Relat Metab Disord* 2004;28:1283-90.
6. Weigle DS, *op cit*.
7. *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids (Macronutrients)*. Institute of Medicine, Food and Nutrition Board. Washington, DC: National Academy Press, 2002.
8. Gerds SK. [Whey Ingredients and Weight Management. Applications Monograph](#). U.S. Dairy Export Council.
9. Hartmann E, Spinweber CL. Sleep induced L-tryptophan. Effect of dosages within the normal dietary intake. *J Nerv Ment Dis* 1979 Aug;167(8):497-9
10. Weigle DS, *op cit*.
11. Corring, et al. Release of cytokinin in humans after ingestion of glycomacropeptide (GMP).

International Whey conference, Rosemont, Ill. 1997.

12. [Weight management and satiety effects of whey proteins](#). Carbery Food Ingredients, Ballineen, Co. Cork, Ireland.
13. Preuss HG, Bagchi D. *Obesity: Epidemiology, Pathophysiology, and Prevention*. CRC Press 2007, p. 481.
14. FitzGerald RJ, Meisel H. Milk protein-derived peptide inhibitors of angiotensin-I-converting enzyme. *Br J Nutr* 2000;84:S33-7.
15. Gerds SK, *op cit*, p. 5
16. Green SM, Delargy HJ, Joanes D, Blundell JE. A satiety quotient: a formulation to assess the satiating effect of food. *Appetite* 1997;29:91-304.
17. Holt SHA, Brand Miller JC, Petocz P, Farmakalidis E. A satiety index of common foods. *Eur J Clin Nutr* 1995;49:675-90.
18. [Omega-3 Fatty Acids](#). University of Maryland Medical Center.
19. [Omega-6 Fatty Acids](#). University of Maryland Medical Center.
20. Burton B, Freeman J. Dietary fiber and energy regulation. *J Nutr* 2000;130:272S-5.
21. Gardana C, Simonetti P, Canzi E, et al. Metabolism of stevioside and rebaudioside A from *Stevia rebaudiana* extracts by human microflora. *J Agric Food Chem* 2003;51(22):6618-22.
22. [Stevia \(*Stevia rebaudiana bertonii*\)](#). Natural Standard Monograph.
23. Nishimukai M, Hara H, Aoyama Y. [The addition of soybean phosphatidylcholine to triglyceride increases suppressive effects on food intake and gastric emptying in rats](#). *J Nutr* 2003;133:1255-1258.
24. Cronin JR. Green tea extract stokes thermogenesis. *Altern Complement Therapies* 2000:296-300.
25. Mason R. 200 mg of Zen; L-theanine boosts alpha waves, promotes alert relaxation. *Altern Complement Therapies* 2001:91-5.
26. Boschmann M. *J Clin Endocrinol Metabol* December 2003;88:6015-9.
27. Heller L. [Americans recognize but ignore importance of breakfast](#). Oct. 11, 2006.
28. Rampersaud GC, Pereira MA, Girard BL, et al. [Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents](#). *J Am Diet Assoc* 2005 May;105(5):743-60.

FEBRUARY 2009