

PROTEIN VS CARBOHYDRATE

The human experience beyond the controversy

Numerous lay and professional articles continue to debate the issues regarding a high carbohydrate, low fat diet compared with the now popular high protein, often high fat diets. The arguments are often heated, and typically decay into a polarized debate focusing on who is “right”. The issues regarding food composition are far more complex than the debate has indicated. There are true differences in metabolism that lead to very different physiological responses to a high carbohydrate diet (>50% of calories from CHO) for some people. These same individuals typically respond well to a more balanced diet with less carbohydrate and more protein and fat. Dietitians are the ideal resource to help clients sort through the confusion if they understand the issues beyond the carbohydrate versus protein controversy.

Do you eat high protein or high carbohydrate? What do you tell your patients? It is time all health professionals stop reinforcing this simplistic argument. In addition, the question of food composition and diet is not limited to the arena of weight loss as most lay publications indicate. This issue is far more complex than whether or not a diet “works”.

First, the most important question is not “do they work?” The more appropriate question is “for whom do they work?” Second, the issue is not protein or carbohydrate, but what balance of carbohydrate and protein works better for any one individual.

Not everyone is able to metabolize carbohydrates effectively. We know there is a three fold difference in glucose uptake between normal weight, non diabetic insulin sensitive subjects and their normal weight insulin resistant counterparts (1). In similar populations there is a ten fold difference in fasting insulin levels (2). These markers suggest that different people may benefit from different ratios of carbohydrate, protein and fat in their diet. If all we do is argue why higher protein diets are not appropriate, dietitians lose not only the public’s ear, but we also will lose our credibility as more and more insight is gained regarding the spectrum of insulin resistance.

I am concerned with a statement by Cheryl Rock, PhD, in the July, 2000 ADA journal article titled, “High-protein, low-carbohydrate diets: do they work?” She states that the reason higher protein diets are successful are because they are “rooted in energy deficit.” This statement fails to address the subtle yet more sophisticated issues regarding weight management and insulin resistance. Yes, calories count. But successful weight management for individuals who are insulin resistant is far more complex than simple calorie balance equations.

Here is some “observational evidence” regarding food composition and weight management that I have experienced personally and professionally as a consultant specializing in weight management and sports nutrition over the past 15 years. The experiences I outline below are common for individuals who are relatively insulin resistant (IR), even years before they present classic clinical signs (truncal obesity, dyslipidemia, hypertension, etc.). See SCAN’s Pulse article Dec. 1995 for more details regarding insulin resistance (3).

1. Eating a high carbohydrate diet (more than 50% of calories from carbohydrate) contributes to rapid weight gain, bloating and edema.
2. A high carbohydrate diet often triggers fatigue and lethargy. IR reflects a fundamental shift in how carbohydrate energy is metabolized, primarily effecting non-oxidative glycolysis and glycogen synthase activity (4). In addition, an elevated insulin level from a high carbohydrate diet can effectively block fat mobilization—even when exercising (5). No wonder some IR folks only begin to lose weight on a high carbohydrate diet when they are practically starving.
3. A diet excessive in carbohydrate can drive a sense of hunger or an imperative need to eat. One can feel “hungry” in as little as 30 minutes after a full meal.
4. A high carbohydrate diet does not lead to satiety. It is easy to eat the whole box of crackers or bag of cookies until physical discomfort finally makes one stop. It is ironic that most healthcare professionals have been conditioned to think of these foods as high fat. But, counter to our programmed thinking, these are high carbohydrate foods. Most of the calories come from carbohydrate—between 50-80% for most cookies and crackers I surveyed.
5. A high carbohydrate breakfast can leave one feeling hungry all day long. This is a big reason why many breakfast skippers don’t eat breakfast. They feel less hungry and eat fewer calories during the day when they don’t eat breakfast. Unfortunately, breakfast skippers typically make up for those missed calories and more once they start snacking later on.
6. Once they folks with insulin resistance start eating sugar or starch, they crave more and more. This often leads to feelings of depression and feeling “addicted.” Three days of no sugar often cuts the craving, allowing for a more sane approach to these same foods. (This takes a lot of practice and skill to pull off successfully without triggering a sense of deprivation or other disordered eating patterns.)

Happy New Year to all of you!

I hope that 2001 finds you healthy and embracing all the goodness in life. In lieu of holiday cards and gifts this year I have chosen to support a charity that appeals to my concern regarding world hunger. My donation to The Heifer Project International in your name will help hungry people feed themselves, earn income and care for the environment. For more information you can call 1-800-422-0755

I intend to continue to research and promote my ideas about insulin resistance and certainly enjoy my practice immensely. I joyfully accept practically every opportunity to speak about my findings. As this research taken on new depths and challenges, I look forward to sharing my observations and work with you.

Thank you for your continued support.

7. Adequate protein (15-30+% of calories) and fat (30-40+ % of calories) in the diet with a more moderate intake of carbohydrate (typically 40-45% of calories, but sometimes even less) contributes to a greater sense of well being and enhanced sense of energy and stamina through the day for these individuals.

8. Adequate protein and modest carbohydrate at each meal allows one to feel satisfied, often with fewer calories than when eating a high carbohydrate meal. (This is the real key to weight loss—one doesn’t need to eat as many calories and can lose fat weight feeling satisfied.)

9. Fewer carbohydrates in the diet does not necessarily mean one is depleting glycogen stores. Many individuals with insulin resistance will lose a great deal of water weight in the first few weeks after changing food composition. One cannot assume this means a loss of glycogen stores. Most insulin resistant persons carry a significant amount of edema secondary to the effect of insulin on sodium and water re-absorption in the kidneys. It is not uncommon for these individuals to lose 3, 5, even 10 pounds of water weight in the first few weeks eating 175-200 g of carbohydrate a day. For a moderately active person, this is hardly putting them at risk for glycogen depletion. Yet, if they resume a high carbohydrate diet, this same edema will reappear.

10. Insulin resistance is not a static state. Many factors effect the relative resistance or sensitivity of our cells to insulin. Factors that improve insulin sensitivity include exercise, effective stress management, a balanced diet and medications like glucophage. Factors that enhance insulin *re-sistance* include increased body fat stores, excessive calorie intake, excessive carbohydrate intake (especially sugars and refined starches), chronic stress (including pain and trauma), a sedentary lifestyle, substances like nicotine, alcohol and caffeine, as well as many pharmaceutical agents (6).

11. Even “normal weight” insulin resistant people metabolize energy differently than folks who are relatively insulin sensitive. It is thought that one out of four Americans (25%) are born pre-disposed to insulin resistance (7). Others develop relative insulin resistance via lifestyle or medical treatments. These are not small numbers. I do not think it is coincidental that 25% of our kids are considered overweight and 30% of the adult public is considered obese.

12. Folks who are insulin resistant are not limited to those already presenting hyperglycemia, elevated blood lipids, and hypertension. Relative insulin resistance can be identified in children, young adults and seniors without the usual biochemical parameters. Look at regional fat distribution. If a patient has a belly, it’s a pretty good bet that there is some insulin resistance at work.

13. Even “fit” and “lean” individuals can struggle with the metabolic consequences of being predisposed to insulin resistance. Many individuals who exercise excessively, are considered restrained eaters or both may be masking the signs and symptoms of IR with their extreme behaviors. They do what they believe they have to do to stay thin.

14. The wide range of signs and symptoms of insulin resistance make assessing a client’s relative metabolic profile a challenge. Each individual is like a puzzle and requires a great deal of empathy, flexibility and biochemical savvy when it comes to nutritional guidance for successful weight, health or disease management.

Patients with PCOS (polycystic ovarian syndrome) often don’t tolerate any sugar, starch, or even whole fruit. They often are successful in losing weight, regaining normal periods only after restricting their carbohydrate intake to 20-25% of total calories. Some type II diabetics are able to handle only 30-35% carbohydrate, especially in the morning meal. Most of my weight loss clients successfully lose weight when they are eating between 40-45% of their calories from carbohydrates. Some clients have tracked their diets so carefully they know when they are eating more than 50% carbohydrate—they start to gain weight.

15. The results from shifting food composition intake to more moderate carbohydrate, with increased protein and fat are outstanding. I see many clients present with hyperlipidemia, hypertension, truncal obesity, gastric distress, and complaints of fatigue and poor concentration. In weeks they notice more energy, better stamina and concentration. They comment that they don’t experience the same abdominal distension, gas, reflux, and other gastrointestinal distress.

Over a few months most see remarkable changes in circumference measures, notably truncal measures (chest, waist, abdomen). Lastly, I watch triglycerides drop, HDL-C rise, blood pressure drop and sometimes medications discontinued within 3-6 months of commencing treatment.

16. Often there is less weight loss than desired or anticipated, but people feel leaner and work hard to get over their preoccupation with the scale. Most of the time clients are far happier with how their body looks and feels than what the scale says.

Advice for today

I am anxiously awaiting the time when definitive clinical studies are published that address these findings. It is our scientific nature to want the data. But I also find that scientific skepticism often masks basic close-mindedness. It is one thing to recognize different thinking as just that—different. It is another thing to adamantly refute any thinking that is contrary to what we have been taught without considering or investigating it with an open mind.

In the meantime shifting food composition isn't all that risky and has a lot of potential benefit. People know when they feel better, when they are able to lose fat weight more effectively, and they understand when their medical data improves. It's time to listen to the anecdotal evidence while the research waits to be done. Just because adequate definitive studies haven't been published does not mean the phenomena is not real.

When it comes to carbohydrate recommendations in the diet, it is important to not let what we think we know interfere with what we are now learning. Walter Willett, PhD, a premier nutrition epidemiologist at Harvard, is already probing the issue. He addressed ACSM (American College of Sports Medicine) in June at the annual symposium with a keynote presentation titled, "Have we misled the public." He's currently advocating up to 40% calories from fat in the diet, of course primarily from unsaturated sources. Even with the typically reported US dietary intake of 12% protein, this means eating less than 50% of calories from carbohydrate per day.

Figuring out how much carbohydrate any one individual can handle takes exceptional patience, scientific knowledge and counseling savvy. This work is ideally suited for dietitians who are up for the challenge. It involves a willingness to listen to clients and adjust their food intake in response to body cues. The dietitian becomes the facilitator, helping the client understand how food functions in his/her body. The patient becomes an active partner, relaying his/her own experiences at each session.

Adequate assessment using computerized dietary analysis includes careful evaluation of food distribution and food composition at each meal. Anthropometric and body composition assessment is tricky. I use scale weight, skinfold calipers, bio-electrical impedance, and circumference measures (chest, waist, umbilicus, abdomen, and hip) to try to pin down how the body is responding to the dietary shift. No one measure captures all the changes. Additionally, periodic blood tests to assess lipids, serum glucose and insulin levels are helpful for those clients who present these symptoms.

The fundamental question remains, "What food pattern and composition works best for any one individual." The process of experimenting with variable food composition patterns is one way to find out.

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INSULIN RESISTANCE:

You can see it in the kids

More and more children are diagnosed with type two diabetes—what we used to call “adult on-set diabetes”, and is now referred to as type II diabetes. At the same time, incidence of childhood obesity is increasing. And more parents are worried about their “chubby” child. It is clear to me that the cost of pushing carbohydrates as a preferred food over the past thirty years is resting in the bellies of our children.

Insulin resistance is predisposed at birth. Children who have diabetes in the family medical history are more likely to not handle carbohydrates well. This means that instead of metabolizing carbohydrates effectively for energy these kids are likely to end up storing these calories as fat. Mostly in their bellies.

The tough part is that most young toddlers have bellies. You don't get to know at this point who is at risk for becoming insulin resistant. I recommend a balanced approach when introducing solid foods. Consistently balancing most meals and snacks with protein, carbohydrate and fat is the key. This balanced approach will benefit all kids—not just those who are born predisposed to insulin resistance.

It starts with starting solids

When a child first starts solids, the emphasis is on carbohydrates. First cereals, then fruits and vegetables. In the last months of the first year we finally add proteins. The role of breast milk and formula during the first year is to provide a strong base of protein and fat intake to compliment the carbohydrates.

As protein rich foods are introduced, it is important to expand the variety of proteins the baby is exposed to in a developmentally appropriate way. As less milk is taken in after the first year, other protein sources become more important. Moist ground meats, chicken, and fish along with eggs, tofu, cheeses are common choices. Children will benefit from the stabilizing effect of protein when these foods are included in meals and snacks throughout the day.

Stabilize your child's energy and well being

Protein helps to lengthen and stabilize the elevation of blood glucose after meals and snacks. This allows children to enjoy a greater sense of well being over time. When a child doesn't eat much protein at meals, include more with snacks.

Of course, preparing and storing protein is far more challenging than grabbing carbohydrate foods and snacks. And most parents know that their kids love pasta, rice, bread. They readily snack on graham crackers, pretzels, and apples. Yes, it is easy to feed kids carbohydrates. And, yes, at least they are eating something.

But here is the bottom line. If parents are unwilling to set limits and reinforce true balance in the diet by including rich protein sources throughout the day on a regular basis, we will be setting the stage for more childhood obesity, particularly for the 25% of kids who are born predisposed to insulin resistance. All kids will benefit by the balance of good nutrition; some kids more than others.

NUTRITION TOPICS FOR PRESENTATION

Insulin Resistance and Energy Metabolism

Getting Lean: The Role of Food Composition and Losing Fat Weight

Children At Risk: What can you do to help your child manage their weight

How to feed athletes: Not everyone benefits from a high carb diet

Insulin Resistance and Women's Health

How Menarchy and the Menstrual Cycle Effects Energy Metabolism

How to Avoid Excess Fat Gain During Pregnancy and Lose Fat Weight
During Breastfeeding

Why Women Get Fat During Menopause

Insulin Resistance and Reducing Your Risk of Disease

The Link Between Heart Disease and Diabetes: How Your Diet Can Help

Preventing Type II Diabetes: The path from insulin resistance to high blood sugar

Your Diet and High Blood Pressure: Bring back the salt shaker—it's not the problem!

My Tummy Hurts: How your diet contributes to gas, bloating and poor elimination