



ARNIE BAKER CYCLING

Maltodextrin Nutrition

The priorities for nutrition during long rides, runs, walks, or triathlons are water, calories, and sodium.

For events under an hour, no special nutrition may be needed. For most events over an hour, concern yourself mainly with fluids and calories. For long-distance events that last most of a day or longer, sodium must also be considered.



ALL-
SPORT
HANDOUT

This brief, specialized article is primarily about one source of calories—maltodextrins.

For more information about sports nutrition, see the fuller article *Endurance Sport Nutrition*, take the *Nutrition Quiz*, or download the *Nutrition Slide Show* or *Maltodextrin Slide Show* at <http://arniebakercycling.com/>

Calorie/Energy Loss

It is typical for cyclists to use 2,500 to 3,000 calories during a century. Runners and walkers use 80 to 100 calories per mile.

Some of this energy comes from the body's stores of carbohydrate (glycogen) and fat. Some energy needs can be met by consuming calories while exercising.

Carbohydrates are the fuel of choice for exercising athletes. Depending upon your size, your body can use up to 300 ingested calories per hour to spare glycogen stores. As a rule, try to consume this many calories for every hour you exercise.

If not racing, cyclists do well to stop periodically and eat "real food"—especially early on in a long ride. Leftover breakfast items such as French toast or pancakes, fig bars, bananas, and Pop-Tarts (perfectly packaged for jersey pockets) are favorites for short stops.

The harder you work, the less you are able to tolerate solid food. "Energy bars" and "gels" do work, but after many hours become tiresome for most athletes.

Carbohydrates-in-solution are a convenient way to get calories. Typical sport drinks and diluted fruit juice have 100–125 calories per 16-ounce bottle. This usually works out to about a 6% sugar solution.

Beverages don't usually have more calories than this because solutions of higher concentration are difficult to digest; more than 6% solutions are associated with cramps, diarrhea, and other gastrointestinal problems.

A few specialty sports drinks that contain glucose polymers or maltodextrins provide more than 400 calories per bottle and are generally easily tolerated. Examples include the proprietary products Extran and CarboFuel.

Better Maltodextrin?

Most commercially available high-carb sports drinks and gels contain maltodextrins mixed into proprietary formulas for taste and color. Other ingredients, for example vitamins or herbs, may be added—generally for marketing purposes.

These formulas sometimes have problems with dissolvability, palatability (taste), caking, or sludging.

You can make your own great solution inexpensively.

You can purchase a wide variety of pure maltodextrin products in 50 pound bags from commercial grain processors. The cost usually is less than \$1.00 per pound or one-tenth that of proprietary products. The bag generally has a shelf life of two years.

Maltodextrin is relatively tasteless; it has minimal sweetness. You can add a little lemonade, fruit juice, Kool-Aid, soda, to your own made-up solution for your personal favorite taste.

Like many proprietary products, some commercial maltodextrins, especially those sold through beer-brewing stores, will cake.

Agglomerated products (processed to yield crystal clumps) are dustless and free-flowing. They are easy to handle. Agglomerated maltodextrins have excellent dispersibility and dissolution characteristics, quickly forming clear solutions when mixed with water.

The product that I use (MaltrinQD 500) can dissolve 3 cups (24 fluid ounces) of powder into 2 cups (16 ounces) of fluid—not that I use that amount. This works out to about 1,000 calories per bottle.

Continued



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If I am planning on taking in only one 16-ounce waterbottle per hour, and no snacks, I mix one cup of maltodextrin in a 16-ounce bottle. This yields about 300 calories. I don't do this often.

If I plan on eating snacks, I usually reduce the amount of maltodextrin to about half this amount. I do this commonly.

If it's hot, I'll drink two or more waterbottles per hour. Again, I'll mix one-half a cup of maltodextrin, or less, in a 16-ounce bottle. This works out perfectly—as it's hot I'll tolerate a lower concentration than when it's cooler—but I'll still be able to average 300 calories of carbohydrates per hour because I'll be drinking more.

Summary: Buy Your Own Maltodex

It's cheaper, easier to handle, and with better taste. You can split a \$100 order (100 pounds)—generally enough for four riders for a year.

More Cycling Nutrition Information

For more information see these publications at <http://arniebakercycling.com/>

- *Bicycle Medicine* book
- *Cyclists' Nutrition Quiz* handout
- *Endurance Sport Nutrition* handout
- *Magical Foods for Cyclists* handout
- *Maltodextrin Nutrition* slideshow
- *Vitamin & Minerals* handout



Product Reference

Maltrin product information:
<http://www.varied.com/food/maltescr.html>

Maltrin ordering, US West coast:
E. T. Horn Company
16141 Heron Avenue
La Mirada, CA 90638
Tel: 800-442-4676
Fax: 714-670-6851
web site: www.ethorn.com

Maltrin ordering, US non West coast:
J. M. Swank Company, Inc.
520 West Penn Street
North Liberty, IA 52317
Tel: 800-593-6375
Fax: 319-626-3662
web site: www.jmswank.com