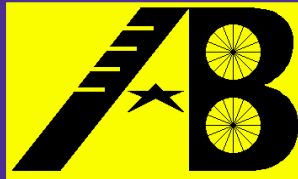


# Maltodextrin Nutrition

Fuel for Exercise



Arnie Baker Cycling  
<http://arniebakercycling.com/>

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ABC Slide Show

1

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Revised 2/15/2005.

Look here for notes for these slides.

For more information, see the ABC handout *Maltodextrin Nutrition* or the ABC book *Nutrition for Sports*.

All slides in this presentation are also in the *Nutrition* Slide Show.

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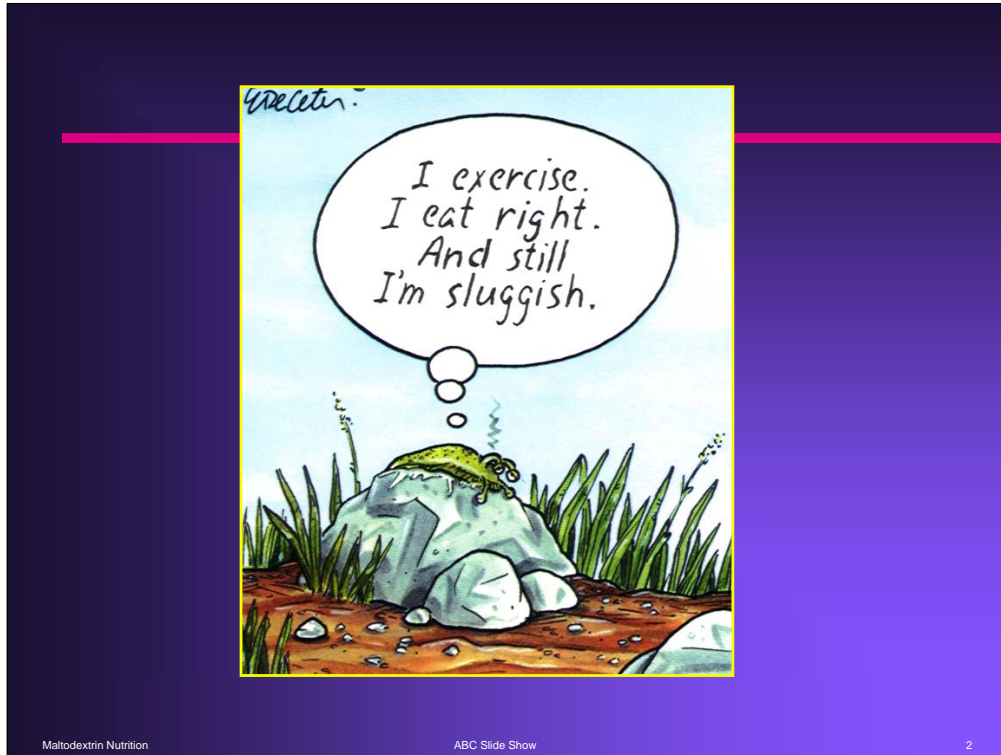
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Overall, nutrition is one of the most popular topics.

Nutrition can help, but it's not everything:

"I used special diets, vegetarian diets with lots of vitamins. Then I'd see the east Germans gorging themselves on greasy French fries and Wiener schnitzel then go out on the track and set world records. It makes you wonder about diet." -Mark Gorski.

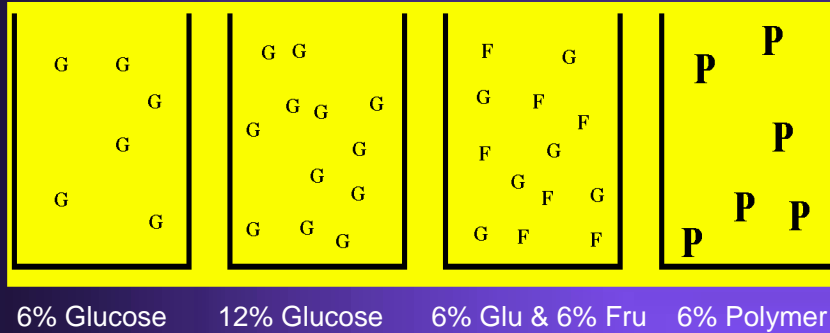
# Three Athlete Needs

- Calories
  - ◆ 300 / hr
- Fluids
  - ◆ To 40 ounces / hr
- Salt
  - ◆ To 1 gram / quart

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These are the three crucial elements of endurance sport nutrition.  
This brief show discusses only one aspect of calories--maltodextrins.

# Optimizing Sugar Solutions



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4

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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.

Some athletes try to add more scoops to get more calories. For example, using twice as many scoops to get a 12% solution. This doesn't work because more than 6% solutions are associated with cramps, diarrhea, and other gastrointestinal problems.

Using more than one type of simple sugar is another strategy. For example, some have tried mixing a 6% glucose and a 6% fructose solution. This also doesn't work. Gastrointestinal distress is still a problem.

More than 400 calories per bottle can be obtained and generally easily tolerated with a few specialty sports drinks that contain glucose polymers or maltodextrins. Instead of one- or two-carbohydrate units found in simple sugars, maltodextrins typically have about 10. They allow increased caloric density without increasing the number of particles or gastrointestinal distress.

# Maltodextrins

- Fuel of choice for aerobic endurance
  - ◆ Caloric
  - ◆ Carbohydrate
  - ◆ Low osmolarity (particle concentration)
    - Less GI distress
  - ◆ Minimal taste – use flavoring of choice
  - ◆ Inexpensive

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5

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Fuel is a common performance limiter for the aerobic endurance athlete. Although glycogen is the most well-known, lasting up to a couple of hours for many riders at a moderately-hard pace, it is exhausted in less than one hour in elite time trialists operating at 92+% of max HR unless glycogen loading takes place.

All-out efforts – maximal sprints – can quickly exhaust fast-twitch muscle glycogen, which is compartmentalized separately from slow-twitch muscle glycogen. Anaerobic energy sources can be exhausted in less than 15 seconds.

Maltodextrins are excellent for carb energy, for sparing stored glycogen, and for replenishing depleted stores.

# High Carb Drinks

Product	Source	[Carb]	Cal/16oz	Na/16oz
■ GatorLoad	MG	20	375	125
■ Carboplex	M	24	440	0
■ Carbo Power	MF	18	330	100
■ Cyberchase	GMF	21	385	20
■ Carbo Fire	GMF	24	440	80
■ Ultra Fuel	MGF	21	385	0

Source:  
Maltodextrin, fructose, glucose



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6

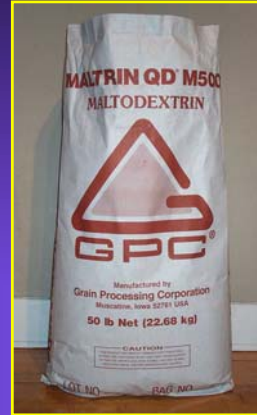
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Source: Maltodextrin, fructose, glucose.

Some proprietary maltodextrin products are listed in the table.

# Maltodextrin

- \$ 0.80 / lb = 1600 cal
- Isotonic 600 cal / 16 oz
- Tasteless
- Dissolvability
  - ◆ 24 oz in 16 oz
  - ◆ 1200 cal / 16 oz
- Suggest
  - ◆ 300 cal / hour
  - ◆ 1 cup / bottle
    - If drinking 1 bottle / hour
  - ◆ < \$ 0.12



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7

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You can make your own sports drink. It's inexpensive. It's simple to do. And you can flavor it with your personal favorite flavors. Buy bulk maltodextrin. Split a \$100 order (100 pounds) – generally enough for four riders for a year.

Product Reference: Maltrin: <http://www.varied.com/food/maldescr.html>

I buy maltodextrin from Grain Processing Corporation. GPC is not a sponsor. I buy their product retail. I use Maltrin QD M500. It is agglomerated, dustless. It pours easily into a waterbottle. This is valuable when filling a bottle of water from a feeder on the fly at an aid station or while racing. It has a slightly higher caloric content for the same osmotic load than other Maltrins.

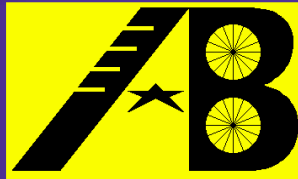
Available on US West coast from: E. T. Horn Company  
16141 Heron Avenue, La Mirada, CA 90638. Tel: 800-442-4676, Fax: 714-670-6851.  
Web site: [www.ethorn.com](http://www.ethorn.com).

Available US non West coast from: 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](http://www.jmswank.com).

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Thank you.