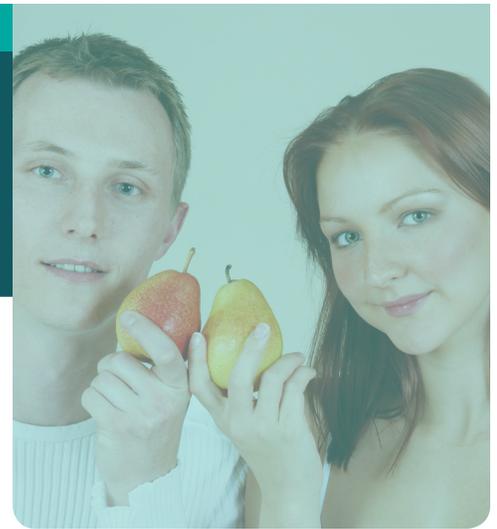


CF Health Matters

Enzyme Guidelines for Adults with Cystic Fibrosis



Good nutrition is important for body maintenance in adults. Good nutrition includes a healthy diet with all the needed nutrients, as well as proper digestion and absorption of these nutrients.

GOOD NUTRITION =
healthy diet + digestion + absorption



out of the body in the stools.

In most people with cystic fibrosis, the tubes in the pancreas are blocked with the same type of sticky mucus found in the lungs. Pancreatic enzymes cannot get into the small intestines, so food is not properly digested. This leads to poor nutrition and/or poor growth. Most people with cystic fibrosis need to take pancreatic enzyme capsules to help with digestion of food.

Enzymes

Pancreatic enzymes contain the enzymes lipase, protease, and amylase which digest fat, protein and larger sugars such as starch. Enzyme capsules are available in two forms, powder and enteric-coated, and are made by different companies in different strengths. The “number” gives the amount of lipase in the product.

Powdered enzymes are available in a loose powder and tablet form. Since these enzymes do not have a special coating some of the enzyme is broken down (therefore it does not work anymore) by acid in the stomach. The enzymes that do reach the upper small intestine help to break down and digest food.

Enteric coated enzymes are used by most children and adults with cystic fibrosis. The coating protects the enzymes from acid in the stomach so that the enzymes reach the small intestines. The coating may take some time to dissolve, so the enzymes are released further down in the intestine than is normal.

The amount of enzymes needed by a person with CF varies with age, body size, and amount and type of food

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eaten. Your CF physician or dietitian will decide the type and dose of enzymes to use. This may change over time, especially in children.

Digestion

When food is eaten it goes into the stomach where it is broken down into small pieces. These small pieces pass into the small intestine. In the healthy body, digestion takes place with the help of bile from the liver and enzymes from the pancreas. The nutrients from the food are then taken in by the body (absorbed) and used for energy and growth. Food not broken down (not digested) passes

Enzymes and Different Types of Food

Foods are made up of protein, fat and carbohydrate. Examples:

Protein foods: meat, fish, poultry, dairy products

Fat: butter, margarine, oils and salad

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dressings; many dairy products, including milk; many meat and meat alternatives; snack foods such as chips, cookies, crackers, chocolate bars; pastries and desserts

Carbohydrate: starches-breads and cereals, rice, pasta, vegetables; sugars- fruit and fruit juice, sugary foods such as candy.

In general, foods that are high in fat and protein need more enzymes than foods high in carbohydrate. Enzymes are not needed for foods that contain only sugar because someone with CF is able to digest these foods with the enzymes found in saliva. Examples of these are fruit, fruit juice and fruit drinks, soft drinks, hard candy, popsicles, Jell-O.

Taking Enzymes

Enzyme capsules may be swallowed whole. They should be given either at the beginning of the meal, or given throughout the meal (i.e. at the beginning and the middle). Enzymes mix with the food eaten, and pass into the stomach and small intestines. It is recommended to take additional enzymes if more food is eaten ~ 1 hour after the last enzyme is taken.

How many enzymes you need depends on how much fat you eat. Each enzyme capsule contains a standard amount of 'Lipase'. This is the enzyme that helps you digest fat. Most adults start with

a certain number of enzymes per meal and per snack. Your doctor or dietitian can determine the starting dose for you based on the types and amounts of food you eat. The amount you take with each meal is adjusted until you no longer have signs of malabsorption.

Tips

- Once enzymes are started, weight gain is a good way to see if someone with CF is digesting and absorbing their food.



- Remember that it is important to adjust your enzymes to the amount of fat you are eating in a given meal. Ask your dietitian to help you with this
- For good health and to prevent constipation, it is very important to drink enough fluids. Check with your dietitian about the amount needed.

Other signs to watch for:

- Stools usually decrease in amount and/or size, and should be less foul smelling or oily looking once enzymes are started. The amount of enzyme given may not be right if you notice the following: loose stools; stooling more often; greasy or floating stools; stomach pain or cramps; gas. Remember that there are other reasons for loose stools such as viral or bacterial infections, and use of antibiotics. Let your CF Team know if you notice these signs of poor absorption.

“ How many enzymes you need depends on how much fat you eat. ”

- Even after you have been taking enzymes for a long time it is helpful to check for changes in your stool every so often. It may be helpful to know that, on average, adults have 1-2 bowel movements a day.
- If you completely forget your enzymes at a meal, the enzyme can be taken within 30 minutes after a meal. However, they work best when given at the beginning or during a meal.
- Enzymes are very sensitive to heat and may degrade sooner than the expiry date indicated on the medication bottle. Do not store enzymes in a cupboard that is in direct sunshine, in the bathroom, in the glove compartment of a vehicle, or any place you think may be too warm in

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your house. If you carry enzymes loose in a pocket or small container, discard the enzymes once weekly and exchange for a fresh supply from your stock bottle.

Do not increase enzymes without checking with your CF Team. Too many enzymes can be harmful.

Tricks to Remembering Your Enzymes

- Have a compact carrying case that can hold a “meals” worth of enzymes. Put it in a place that is always convenient (i.e.: your jacket pocket, your purse)
- When you are out for a meal and you don’t want your company to know that you need to take enzymes, excuse yourself and go to the restroom. Take your enzymes there, and then return to your table. Do this as close as possible to eating the meal.

- If you find you don’t always remember to bring your enzymes with you, try placing full containers in the places you occupy; the kitchen, desk at work, school locker, backpack, purse.

“ **Never increase enzyme dosage without consulting your CF team. Too many enzymes can be harmful.** ”

Your Questions Answered

- Q.** How will I know if the enzyme dose is correct?
- A.** Healthy weight gains, having stools less often or in smaller amounts are still signs that you are getting the right amount of enzyme.

Q. Which foods do not require enzymes for digestion?

A. Fruit (including dried fruit), juice, soft drinks, hard candy, popsicles and Jell-O are examples of foods that do not need enzymes.

Q. I need enzymes with liquids, such as milk, if that is all I am having?

A. Yes. Milk and other drinks such as milkshakes and yogurt drinks contain protein and fat that require enzymes for digestion. The only liquids that do not require enzymes include juice, pop and sports drinks.

Q. Would I feel any pain if I were taking too many enzymes?

A. Not necessarily, although some have complained of having stomach pain when on very high doses of enzymes. Check with your CF team to make sure your enzyme dose is safe, because it is very harmful to take too many enzymes.