

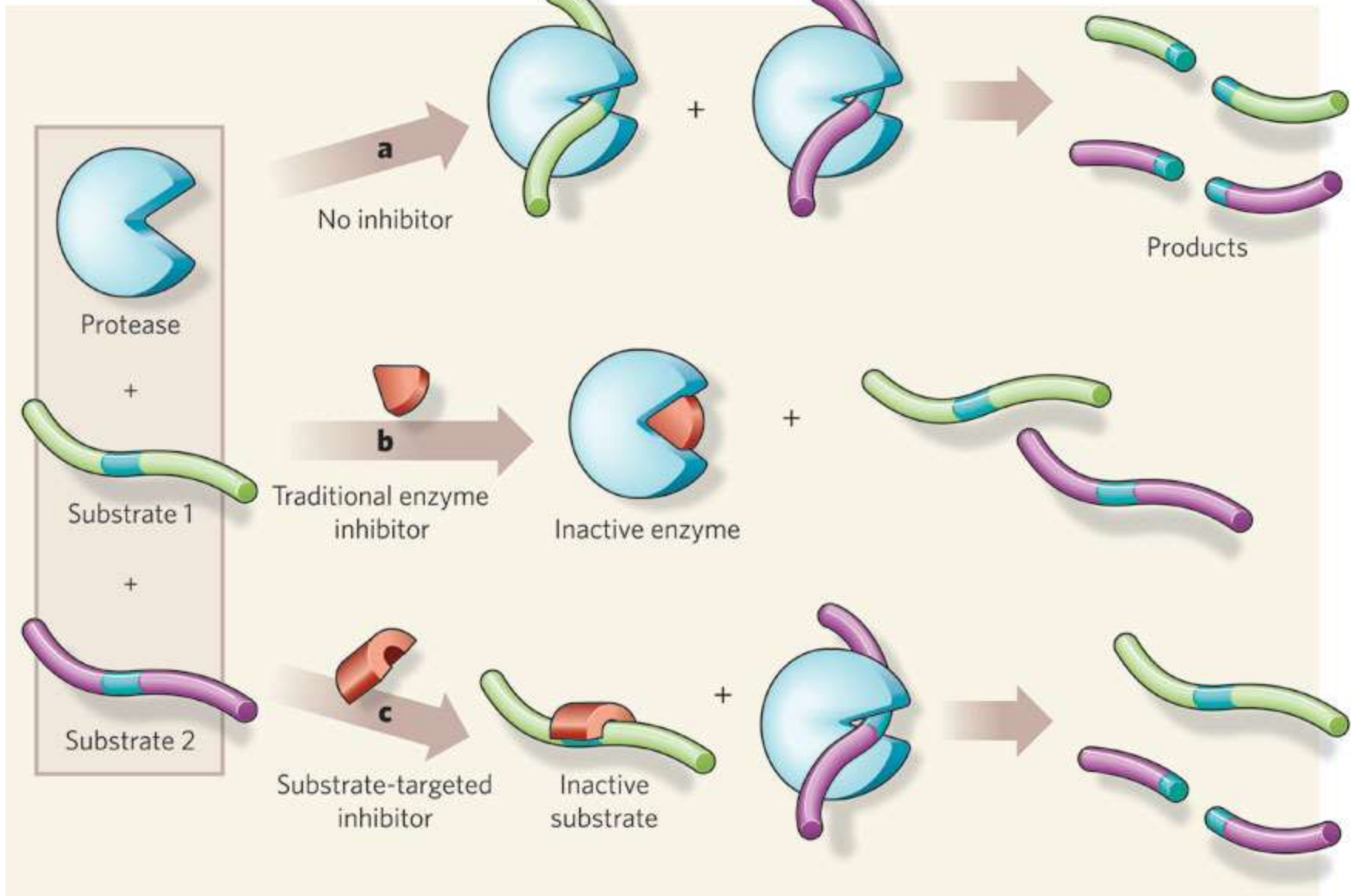
Enzyme-therapy in insufficiency of digestion

What is enzyme-therapy?

- is the use of enzymes to treat deficiencies and other **medical conditions in the body**;
- An enzyme is a macromolecule that catalyzes (speeds up) processes in the body. Enzymes help to **digest food, break down toxins, cleanse the blood, strengthen the immune system, build protein** into muscle, contract muscles, eliminate carbon dioxide from the lungs and reduce stress on the pancreas and other vital organs;
- Enzyme therapy has a wide variety of proposed medical uses, ranging from the **treatment of cystic fibrosis and pancreatic insufficiency, to certain cancers or tumors**. The therapy may be **systemic or non-systemic**, and may be administered via multiple routes of administration, most often orally, topically or intravenously.

Enzyme Therapy

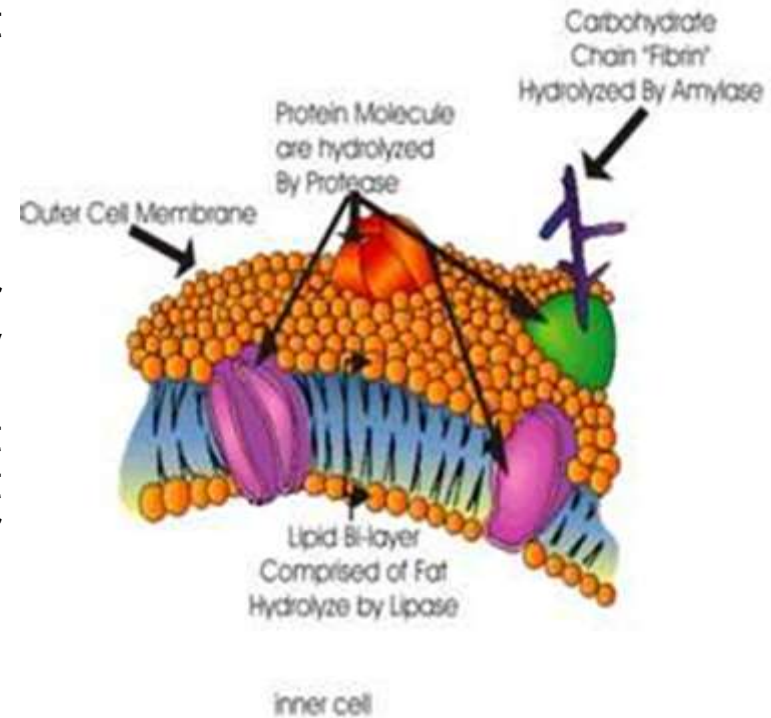
- Enzyme replacement therapy, a subdivision of enzyme therapy, is a medical treatment **replacing an enzyme in patients in whom that particular enzyme is deficient or absent**. Enzyme replacement therapy is usually administered through intravenous (IV) infusion. It is currently available **for lysosomal diseases, such as Gaucher disease and Fabry disease**.
- **Non-specific enzyme therapy**, another subtype of the general category of enzyme therapy, does not intend the catalysis (speeding up) of definite steps of metabolism, but claims to stimulate regenerative processes in the body. Initially, non-specific enzyme therapy was considered a promising approach. The growing knowledge in basic research and the lack of evidence for clinical effectiveness rendered the predominantly oral application of enzyme preparations for non-specific treatment outdated by the 1960s. In Germany, however, the absence of strict legal regulations prevented the deregulation of drugs designed for non-specific enzyme therapy, resulting in the continued usage of these therapies.



Digestive Enzyme Therapy cure illnesses

Enzyme-therapy

- Enzyme therapy is a subject of debate in the medical community, as many physicians and other health practitioners do not accept it. There is little or no scientific evidence that enzyme supplements are **successful in treating certain diseases, such as cancer**. Because enzyme therapies are promoted as dietary supplements (and not as drugs), manufacturers can market them in the United States without proving they are effective, or even safe, as long as they do not claim they can prevent, treat or cure a specific disease. This leads many physicians to believe that enzyme therapy may be an unsafe treatment for patients. Experts question whether enzymes taken as oral supplements can even reach tumors, or other sites of action, through the bloodstream because they are often broken down into amino acids before being absorbed in the digestive tract. Further well-controlled trials are needed to draw any firm recommendations.



Enzymes used in therapy

- **Bromelain** is one of the most popular enzymes used in enzyme therapy. Bromelain is classified as an herb and **contains a proteolytic digestive enzyme that comes from the stem and the fruit of the pineapple plant.** When taken with meals, bromelain may aid in the digestion of proteins. **When taken on an empty stomach, it may act as an anti-inflammatory agent.**
- **Trypsin**, a proteolytic enzyme, is also used in enzyme therapy. When taken orally, it is often **used for digestive enzyme supplementation, often in combination with lipase and amylase.** It has also been combined with bromelain and rutin to treat osteoarthritis. Trypsin may be used topically to remove necrotic tissue and debris during wound and ulcer cleaning. Trypsin supplements are derived from fungi or bacterial sources, pancreas of livestock or from plant sources. It may be used to remove dead tissue cells that remain after trauma, infection or surgical procedures. This removal allows new skin or tissue cells to grow.

- **Chymotrypsin** has been used orally to reduce inflammation and edema (swelling) associated with abscesses, ulcers, surgery or trauma. This enzyme is also used as an expectorant in asthma and other pulmonary diseases, and in reducing liver stress. Topically, it is used for inflammatory and infectious disorders. It can also be used as an inhalant, intramuscular injection or ophthalmically. It has ingredients that are proteolytic, anti-inflammatory and antioxidant, which are all thought to reduce tissue destruction.
- **Pancreatic enzymes** were reportedly first used to treat cancer in 1902 by John Beard, a Scottish scientist. In the 1920s, Dr. Edward Howell introduced enzyme therapy to the United States. Howell believed that by eating raw meat, people created an enzyme surplus, which resulted in better health and increased resistance to disease. German researchers later used enzyme therapy to treat patients with multiple sclerosis, cancer and viral infections. Some enzyme mixtures are still commonly used in several European countries.

Pancreatic enzyme therapy

- The theory behind pancreatic enzyme therapy is to restore normal gastrointestinal physiology as completely as possible by supplementing deficient pancreatic enzymes. Pancreatic enzyme therapy such as the prescription product Pancrease®, is commonly used to treat pain associated with chronic pancreatitis. However, some studies have found no significant benefit of the therapy to relieve pain associated with chronic pancreatitis. Scientific research suggests that chronic pain may be reduced with other forms of alternative medicine. For example, bromelain, hypnosis and therapeutic touch have been proven to effectively treat symptoms of pain.

Pancreatic enzyme therapy

- Although administration of large amounts of proteases as enzyme therapy has provided pain relief in some pancreatitis patients, the rationale for using enzymes to relieve pain in chronic pancreatitis has not been generally accepted. Administered enzymes may be destroyed by gastric acid, resulting in malabsorption of the enzymes. Also, acidic conditions in the duodenum decrease the efficacy of pancreatic enzymes administered with meals. Histamine-H₂-receptor antagonists may decrease gastric acidity but there are certain drawbacks to long-term use of these agents. The use of enteric-coated microspheres overcomes many of the problems associated with enzyme destruction. Patients with chronic pancreatitis display considerable individual variation in their treatment requirements. Therapy must be tailored to meet the need for adequate disease control as well as for social and emotional acceptability by the patient. The attending physician and the patient share the responsibility for maintaining appropriate therapy.

Exocrine pancreatic insufficiency (EPI)



*Damaged pancreas
no longer produces
enough digestive
enzymes to properly
digest food*

*Digestive
pancreatic
enzymes*



Lipase



Protease



Amylase

Food



Fat



Protein



Carbohydrates

*Reduced absorption of
nutrients from food*



Who should take Digestive enzymes?

People with

Digestive Diseases

If you have any type of digestive disease such as acid reflux, gas, bloating, leaky gut, irritable bowel syndrome (IBS), Crohn's disease, ulcerative colitis, diverticulitis, malabsorption, diarrhea or constipation, then digestive enzymes can help. Digestive enzymes can take stress off of the stomach, pancreas, liver, gallbladder and small intestine by helping break down difficult-to-digest proteins, starches and fats.



Age-Related Enzyme Insufficiency

As we age, the acidity of our stomach acid becomes more alkaline. In respect of enzyme production, this means there's an increasing likelihood the acidic "trigger" produced when chyme enters the intestine may fail. If the acidity trigger fails, then the "signal" isn't given to secretin, which in turn prevents pancreatic secretions from releasing.



Hypochlorhydria

It's not only the elderly who suffer from hypochlorhydria, or lack of stomach acid. Aside from a decrease in stomach acid failing to trigger reactions, the acid itself cannot break down foods to release minerals, vitamins and nutrients. Many micronutrients are "cleaved" or released from food while it's in the stomach — if this action fails then there's an automatic nutritional or enzymatic insufficiency.



Liver Disease

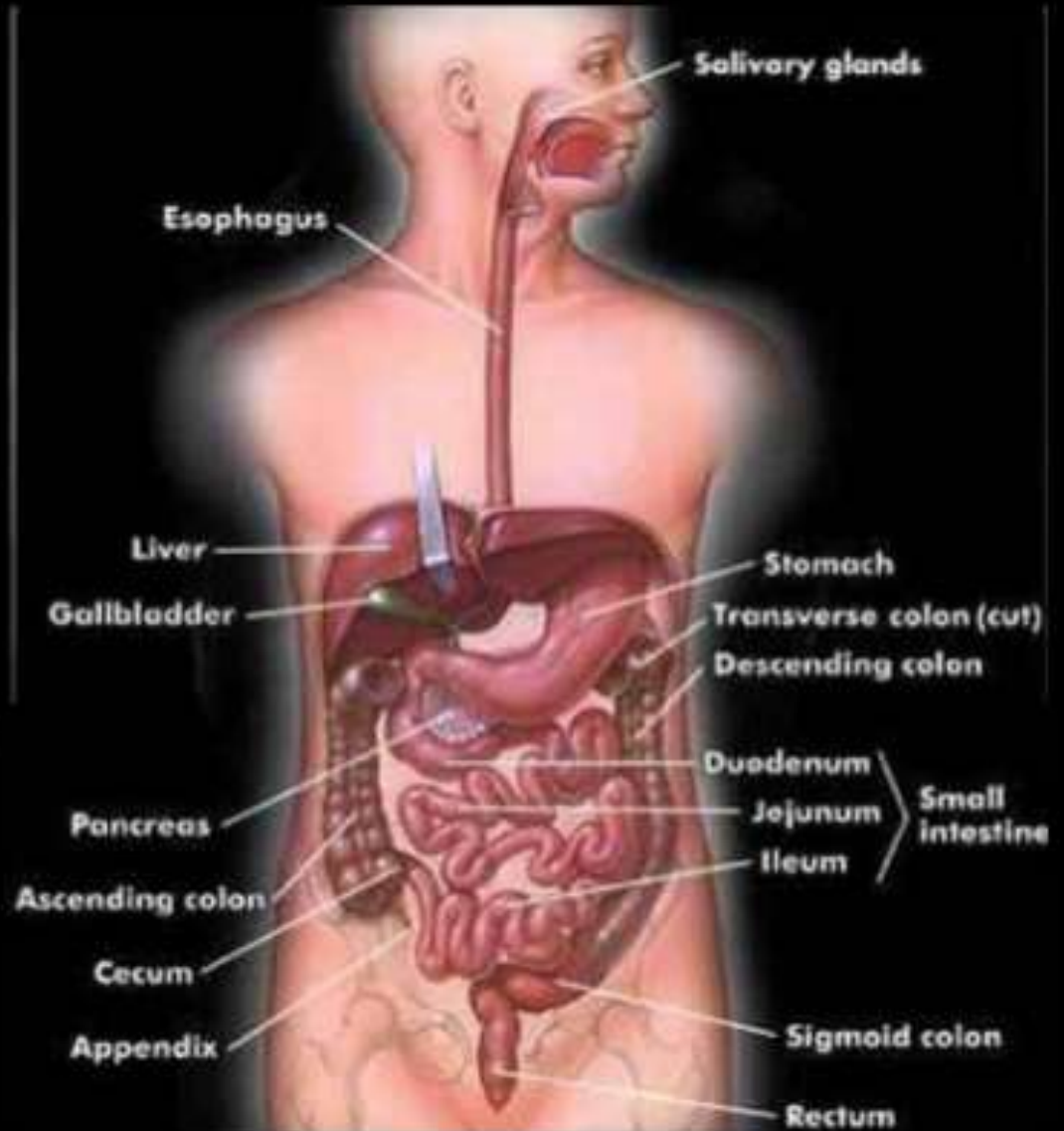
Anyone with liver disease should be suspected as having a concurrent enzyme insufficiency. One of the more common conditions is known as alpha-1 antitrypsin deficiency, a genetic disorder that affects roughly one in 1,500 people worldwide. Typically first affecting adults between 20–50 with breathing and other respiratory complaints, roughly 15 percent of adults develop liver disease.



Insufficiency of digestion

- Inflammatory diseases of intestines are a current problem of modern medicine in general and pediatrics in particular. Among other manifestations of these diseases a certain place is taken by the insufficiency of digestion which is quite often **leading to a growth inhibition and development of sick children**. For the purpose of correction of symptoms of insufficiency of digestion in a complex of treatment carrying out a replaceable **enzyme-therapy** is recommended. When choosing medicine for a replaceable enzyme-therapy preference should be given to the **modern microgranulated medicines of pancreatic enzymes**.

- **Insufficiency of digestion** is a pathological condition at which the digestive system does not provide assimilation of the nutrients that get inside the organism.



References:

- <http://e-gaho.blogspot.com/2012/02/digestive-enzyme-therapy-cure-illnesses.html>
- <https://www.allinahealth.org/CCS/doc/Thomson%20Alternative%20Medicine/48/20021.htm>
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5569274/>
- <http://www.naturallivingcenter.net/ns/DisplayMonograph.asp?StoreID=b571dewxvcs92jj200akhmccqa7w8v75&DocID=bottomline-ungraded-enzymetherapy>
- <https://cyberleninka.ru/article/n/primeneniye-pischevaritelnykh-fermentov-v-pediatricheskoy-gastroenterologii>
- <https://cyberleninka.ru/article/n/fermentnyye-preparaty-v-kompleksnoy-terapii-vospalitelnykh-zabolevaniy-kishechnika-u-detey>
- https://www.pharmindex.ru/practic/3_gastro.html
- <https://sciencebasedmedicine.org/systemic-enzyme-therapy/>
- <https://www.webmd.com/digestive-disorders/exocrine-pancreatic-insufficiency>
- <https://www.identifyepi.com/what-is-epi>