

Pancreatic Enzymes Improve Digestion to Reduce Malabsorption

Pan 5X Capsules Digest 70-85 Times Their Weight in Dietary Fats, Starches and Proteins

Pancreatic enzymes are important in hydrolysis of proteins, carbohydrates and fats into metabolically useful elements — amino acids, sugars, fatty acids and glycerol. **Pan 5X** is so abundant in pancreatic enzymes that one capsule will digest:

- 85 times its weight in dietary starch.
- 85 times its weight in dietary protein.
- 70 times its weight in dietary fat.

Pan 10X is twice that strength.

Enteric coated pancreatin tablets were used as digestive aids for a number years before clinical trials showed the tablets to be more effective when the enteric coating was removed and the tablets crushed and administered in capsule form.⁽¹⁾ **Pan 5X™** and **Pan 10X™** are supplied as powdered supplements in capsule form.

It is important to note that the functionality of pancreatic enzymes is enhanced by other enzyme systems including salivary amylase, gastric pepsin and intestinal saccharides.

PAN 5X™ 5X USP Raw Pancreas Enzyme Concentrate

Product No. 964 Fill Size: 90 capsules
Product No. 9642 Fill Size: 250 capsules

Each capsule supplies the following minimum pancreatic enzyme activity:

Amylase ----- 40,000 U.S.P. Units
Protease ----- 40,000 U.S.P. Units
Lipase ----- 7,500 U.S.P. Units

Ingredients: raw porcine pancreas concentrate, rice flour, vegetable stearine, gelatin, magnesium stearate.

Suggested Use: One to four capsules capsules at the end of each meal as a digestive aid.

PAN 10X™ 10X USP Raw Pancreas Enzyme Concentrate

Product No. 428 Fill Size: 90 capsules
Product No. 4282 Fill Size: 250 capsules

Each capsule supplies the following minimum pancreatic enzyme activity:

Amylase ----- 80,000 U.S.P. Units
Protease ----- 80,000 U.S.P. Units
Lipase ----- 15,000 U.S.P. Units

Ingredients: raw porcine pancreas concentrate, rice flour, vegetable stearine, gelatin, magnesium stearate.

Suggested Use: One to six capsules daily with meals for severe pancreatic insufficiency. Take between meals for parasites or inflammatory conditions.

The raw pancreas enzyme concentrate in these products is prepared by a special process which does not exceed physiological temperature (37° C). Guaranteed to be free of chemical pesticides and synthetic hormones.

Oral Supplements Increase Enzyme Activity to Nearly Normal in Cases of Pancreatic Insufficiency

In a study on the therapeutic response to oral enzymes in severe pancreatic insufficiency, researchers concluded that "...the administration of these high potency digestive aids, along with meals, does have a very positive clinical influence on reducing malabsorption through improved digestion — when comparing a healthy pancreatic sufficient individual to one with pancreatic insufficiency, the use of pancreatin with meals greatly increases the fat-splitting enzyme activity in the duodenum to nearly normal levels."⁽³⁾

Without sufficient pancreatic enzymes, digestion will be incomplete, resulting in malabsorption, multiple nutritional deficiencies

and a host of related symptoms. Oral enzyme supplements have been effectively used therapeutically in cases of:

- Food allergies.
- Inflammation resulting from trauma,⁽⁵⁾ arthritis or allergy.
- Malabsorption caused by pancreatic insufficiency resulting from cystic fibrosis, excessive use of alcohol, or surgical resection of portions of the pancreas⁽¹⁾ or high fat diet.⁽²⁾
- Pancreatectomy.
- Chronic pancreatitis.
- Toxic bowel syndrome resulting from overgrowth of gastrointestinal bacteria.⁽³⁾

- Systemic parasites.
- Obesity.⁽⁶⁾
- Acne rosacea.⁽⁷⁾

Of the myriad of approximately 30 identified pancreatic enzymes present in **Pan 5X** and **Pan 10X**, amylase, lipase and protease are considered to be of greatest physiological importance.

- Pancreatic amylase digests starch, dextrans and glycogen, converting them to maltose, a disaccharide.
- Pancreatic lipase hydrolyzes dietary fats, splitting them into glycerol and fatty acids.

- Pancreatic protease is made up of a mixture of proteolytic enzymes including trypsin, chymotrypsin, carboxypeptidase and elastase. These enzymes initiate the digestion of large protein molecules and fragments, splitting them into still smaller fragments, and finally to individual amino acids. Proteolytic enzymes have also been shown to reduce inflammation and speed healing in soft tissue injuries.⁽⁵⁾

Pan 5X™ and **Pan 10X™** were designed primarily as digestive aids. The combination of enzymes in the **Inflamase™** formula are more effective as an anti-inflammatory.

Effective Therapeutic Use of Enzyme Supplements

Effective enzyme therapy requires the administration of sufficient quantities of replacement enzymes. The *in vitro* activity can be related directly to *in vivo* potency.⁽¹⁾ **Pan 5X™** is a potent and effective digestive aid.

Our most potent supplement, **Pan 10X™** may be used for inflammation and digestive support in acute or severe cases of pancreatic insufficiency, but should not be used for prolonged periods by persons with a healthy, normally functioning pancreas.

Gastric acidity and possibly low duodenal pH may interfere with effective enzyme replacement in some patients. For these patients, the addition of an antacid may be indicated. The pH barrier is usually not a grave problem because hyperacidity is rare in patients with exocrine pancreatic insufficiency; whereas, hypochlorhydria and achlorhydria are common findings.⁽¹⁾

High fat diets inhibit pancreatic enzyme utilization, which is one of the main causes of protein malabsorption;⁽²⁾ therefore, supplements will be more effective if a low fat diet is followed.

Used as a digestive aid, pancreatic enzyme supplements should be taken with meals or at the end of a meal.

Proteolytic enzymes used for inflammation or to reduce swelling and speed healing in soft tissue injuries should be taken between meals, on an empty stomach, for maximum effectiveness.

WARNING: This information is provided for health care professionals only. This publication and the products contained herein have not been approved or evaluated by the Food and Drug Administration. This publication, and the products contained herein are not intended to diagnose, treat, cure or prevent any disease. The product relates to nutritional support only.

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SCIENTIFIC BIO-LOGICS, INC.

16612 Burke Lane * Huntington Beach, Calif. 92647

www.sblogics.com * info@sblogics.com

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