About digestive enzymes

Introduction:
An enzyme is any of various types of proteins which act as catalysts to speed up the body's biochemical processes. Enzymes build new proteins, cells, tissues, and organs, and can also break down these same tissues. All living organisms contain enzymes - without them, life could not exist.

Digestive enzymes are a group of specific enzymes in the gastrointestinal tract which function to break down the components of food. While digestive enzymes are also produced in the mouth (in saliva) and the stomach, the area of greatest digestive enzyme activity is in the small intestine.

A key organ in digestive enzyme production is the pancreas. Up to 1.5 quarts of pancreatic juice, containing digestive enzymes to break down carbohydrates, fat and protein, is secreted by the pancreas into the small intestine every day. The major pancreatic enzymes are known as lipases, amylases, and proteases (including trypsin, chymotrypsin and carboxypeptidase).

Supplemental enzymes, particularly pancreatic digestive enzymes, have a long history of traditional use. In addition to digestive support, pancreatic enzymes have been recommended for immune system support, to support urinary tract health, lung health, and for the relief of occasional pain and inflammation associated with exercise.

How Does It Work?:
Enzymes have specificity, meaning they act only on their specific substrates. For example, the digestive enzyme amylase acts on carbohydrates, lipase on fats, and protease on protein. Therefore, to obtain greater benefits, a digestive enzyme supplement should include a range of enzyme types. Mega-Zyme systemic enzymes contains eight key enzymes, plus 10X pancreatic enzymes for maximum digestive support. 10X strength refers to a high potency (10X) pancreatic enzyme complex which is 10 times more potent than the minimum activity specified by the United States Pharmacopoeia (USP).

The ingredients in Mega-zyme systemic enzymes are buffered with bicarbonate. Bicarbonates help to neutralize the acid environment of the stomach and allow the
digestive enzymes to work in the small intestine. Normal pH of the stomach is 2 (acidic) while pancreatic juice is about 8 (basic). Bicarbonates assist in changing the acidic environment to an alkaline environment. The bicarbonates in Mega-Zyme systemic enzymes are designed to work with the other ingredients to support a healthy digestive system.

Mega-Zyme systemic enzymes was also used in several clinical trials demonstrating its benefits for relieving muscle pain and inflammation associated with exercise. In comparison with the placebo group, athletes taking Mega-Zyme systemic enzymes before and after intense exercise had less muscle pain and faster recoveries.

The following chart summarizes the activity of each of the enzymes in Mega-Zyme systemic enzymes.

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>Substrate</th>
<th>Action</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protease</td>
<td>Protein</td>
<td>Cleaves polypeptide chains</td>
<td>Porcine</td>
</tr>
<tr>
<td>Amylase</td>
<td>Carbohydrates</td>
<td>Breaks down starch to maltose and dextrin</td>
<td>Porcine and Aspergillus oryzae</td>
</tr>
<tr>
<td>Lipase</td>
<td>Lipids (fats)</td>
<td>Degrades fats to glycerol and fatty acids</td>
<td>Porcine and Rhizopus Oryzae</td>
</tr>
<tr>
<td>Trypsin</td>
<td>Protein</td>
<td>Hydrolyzes peptides, amides, esters, etc at the bonds of the carboxyl groups of L-arginine or L-lysine</td>
<td>Porcine</td>
</tr>
<tr>
<td>Papain</td>
<td>Protein</td>
<td>Catalyzes the hydrolysis of proteins and peptides with preferential cleavage at bonds containing arginine, lysine, and glycine residues</td>
<td>Papaya</td>
</tr>
<tr>
<td>Bromelain</td>
<td>Protein</td>
<td>Hydrolyzes proteins to oligopeptides and amino acids</td>
<td>Pineapple</td>
</tr>
<tr>
<td>Lysozyme</td>
<td>Starch (initiates breakdown)</td>
<td>Hydrolyses the bond between N acetyl muramic acid and N acetyl glucosamine</td>
<td>Egg</td>
</tr>
<tr>
<td>Chymotrypsin</td>
<td>Protein</td>
<td>Cleaves carboxyl links of hydrophobic amino acids</td>
<td>Bovine</td>
</tr>
</tbody>
</table>
**Recommendations:** Two tablets before each meal.

**Precautions:** If pregnant, nursing, or taking prescription drugs, consult your healthcare practitioner prior to use.

**References:**


