DIGESTIVE ENZYMES FOR CHILDREN

NEC White Paper

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Getting our kids to eat at all is difficult; getting them to eat right is even more so. We have all seen them in the grocery store: Parents combing the aisles trying to find foods that are nutritious and acceptable to their child’s picky diet. Many parents just give in and make a stop at a fast-food restaurant to, at the very least, get an energy-dense, but nutrient-poor, meal into their child. Often this becomes a routine in the family and may become a habit practiced by the child in later years. Children are blitzed by images of sugary foods and snacks on television and Internet ads. Once enticed with the high-sugar and high-fat delicacy or brand-name product, the child demands to have it — now. Reasoning with a child as to the virtues of a healthy diet is often pointless. Taste and sugar-highs often trump nutritional value.

Childhood obesity ranks as one of the top health concerns in the Western world. Many health problems encountered by adults are outcomes of eating habits learned during the early years of childhood. Calcium and magnesium levels in adults are often much below recommended levels, and it is difficult for many, especially women, to consume enough in their diet to obtain healthy levels. Many start dieting with no guidance or knowledge of food health, limiting intake of crucial nutrients even more.

Many parents find relief in any amount of healthy nutrients that children consume, even though the amount may be small in a child’s diet. Increasing the available nutrition from healthy foods is one way to celebrate the stepping-stones leading to a balanced diet. Based on a number of studies, one of the best ways to accomplish better nutritional bioavailability is through the use of dietary enzyme supplements.

Enzymes are specialized proteins that accelerate chemical reactions in our bodies. Life cannot occur without enzymes, and lack or dysfunction of enzymes can compromise healthy systems. Enzymes produced by the pancreas and small intestine do the bulk of the work during digestion as the pancreas produces large quantities of enzymes designed to break down foods once they enter the small intestine from the stomach.

However, many of today’s foods appear to be more resistant to the work of pancreatic enzymes. Plant-based enzymes, whether sourced from foods or supplements, are proteins and are treated by our digestive system as any other food protein. Enzymes derived from plant sources differ from pancreatic enzymes in that they are actually acid-stable. Plant-derived enzymes start the food breakdown process while still in the stomach. This is much sooner than breakdown normally occurs, as the digestive enzymes produced by the pancreas are not encountered until the food mass leaves the stomach and enters the small intestine. Proteins, peptides and other large molecules, such as starch, are not absorbed from the stomach. This means that acid-stable enzyme supplements can work on those foods and degrade them prior to their entry into the intestinal tract, where absorption does occur.
Insufficient amounts of certain enzymes may result in food intolerances. Lactose intolerance is a condition suffered by as much as 65 percent of the world’s population. The enzyme lactase breaks down lactose, a milk sugar, into simple sugars. Deficiencies of this enzyme can result in bloating, gas and diarrhea to the extent that dairy products are eliminated from the diet. Dairy, a food group rich in calcium, magnesium and proteins, is important to growth and development. Lactose intolerance and subsequent elimination of dairy in the very young can result in nutritional deficiencies. Supplemental vitamins and minerals are then suggested to make up the shortfall in nutrition but are often not enough to achieve needed levels for healthy development. While vitamin and mineral supplements can be useful, most nutritionists believe that whole foods are the optimal source for obtaining nutrients.

The addition of a lactase supplement can allow dairy to be added back to the diet without the unpleasant effects of intolerance. Enzyme supplementation of lactase that begins in childhood may allow inclusion of dairy products to a child’s diet and reduce the less-than-desirable experiences associated with lactose intolerance. With no interruption in this crucial source of calcium and magnesium, a child can be better assured of developing healthy bone density and support for the immune system.

Other intolerances caused by incomplete digestion of food proteins may also be problematic. Food proteins are normally broken down into amino acids during the digestive process through the action of specific enzymes called proteases. Incomplete digestion of food proteins results in the formation of smaller proteins called peptides. These peptides are often small enough to be absorbed from the gut into the circulatory system or interact with other cell proteins, called receptors, and exert biological effects. Sometimes these effects are beneficial; peptides generated from salmon and milk proteins by human digestive enzymes were found to produce anti-hypertensive effects. Other times, the peptides have resulted in processes that are not so desirable, such as gliadin production from gluten protein. Wheat avoidance is a way of life for those suffering with celiac disease as the production of gliadin by their own digestive enzymes can result in severe intestinal injury.

Many of today’s foods appear to be more resistant to the work of pancreatic enzymes, and grains, such as wheat and soy, are particularly resistant to pancreatic enzymes. Often the enzymes required for proper digestion of these grains are too deficient and may lead to development of food sensitivities, intolerances and allergies. Allergies can run the gamut from mild reactions, such as skin rash, to full-blown anaphylaxis; however, many more suffer from non-anaphylactic disturbances that cause cramping, gassiness, and even mood and behavior changes.

Incomplete break down of starches can be problematic, as well. Normally starches are quickly broken down by carbohydrase enzymes, such as amylase and glucoamylase, into simple sugars that are then rapidly transported out of the intestinal tract. However, if those enzymes are present in insufficient quantity, such that the amount of starch consumed is not quickly and efficiently digested, then starches become a feed station for gut bacteria and yeast. Starches will actually begin to ferment in the gut and change the gut environment. Just as a dirty household may attract unwanted pests, a dirty gut may encourage the growth of unwanted microbes that may crowd out the good bacteria.

A healthy diet is essential in supplying healthy nutrition but will not help if digestion is incomplete and negatively affects the...
balance of gut flora. Enzyme supplements provide support for more thorough digestion of all foods. This results in increased bioavailability of food nutrition for absorption, less fermentation within the gut, a more supportive gut environment and a decreased likelihood of developing food intolerances or nutrient deficiencies during the childhood years.

Unlike most other food proteins, enzymes are less susceptible to proteolytic degradation, which explains their ability to stay active within the gastrointestinal tract. Enzyme supplements are considered safe for consumption as no level of dosing has been found to harm or negatively affect humans or animals. Humans have consumed enzymes in various forms for centuries; thus, the historical record for enzyme safety is very strong14.

Many enzyme products are available to the consumer, but not all are formulated for the specific needs of children. Most enzyme supplements are in capsule form that many children cannot swallow. Others may be bottled as a powder to be added to drinks or foods during meals but may impart a taste not pleasing to children. BioCore® Kids is targeted to the dietary needs of children. This blend offers enzymes for breakdown of starches, carbohydrates, proteins and fats as a fruit-flavored chewable tablet. By starting the breakdown of foods while in the stomach, nutrients derived from meals can be accessible for gut absorption much quicker – often as soon as the food moves out of the stomach into the small intestine. Another benefit to children taking BioCore® Kids is better maintenance of gut flora through the reduction of undigested food in the intestinal tract. More importantly, the regular use of BioCore® Kids may allow children to add back some foods to which they exhibit intolerance. The amount of enzymes necessary to fully breakdown the food and deliver the nutrients varies depending on meal size. The serving size of BioCore® Kids should follow the recommended dosing while also considering the size of the child’s meal—not body weight or age since the enzymes do not distribute outside of the gut in significant amounts.

Dr. Devin Houston, PhD, an accomplished researcher and entrepreneur, is most notably recognized as a pioneer in enzyme-based research for children. Even in the early beginnings of his medical career, Dr. Houston was focused on enzymes in the body. In fact, his graduate work focused on how the aging process affected certain enzyme systems. Since March of 2000, Dr. Houston has been a scientific consultant to the dietary supplement industry.

REFERENCES


