

## BACKGROUND INFORMATION

BioCore<sup>®</sup> Dairy is a blend of lactase and fungal proteases that is designed to bring relief from the digestive malady known as dairy intolerance. Dairy intolerance typically consists of two parts: lactose (milk sugar) intolerance and milk protein intolerance. Many times dairy intolerance is incorrectly described as lactose intolerance and the products available on the market currently only address that issue.

BioCore<sup>®</sup> Dairy is a comprehensive blend of lactase and proteases that not only ameliorates the symptoms of lactose intolerance but digests the milk protein, b-lactoglobulin, which is responsible for milk protein intolerance.

BioCore<sup>®</sup> Dairy is an enhanced formulation that targets milk fat digestion in addition to dairy intolerance. BioCore<sup>®</sup> Dairy Ultra comprises the same protease and lactase activity as BioCore<sup>®</sup> Dairy as well as 600 FIP units of lipase activity to digest the fat content in dairy products.

Table 1 shows the activities of enzymes in BioCore<sup>®</sup> Dairy and BioCore<sup>®</sup> Dairy Ultra. The enzymes in both the products have a wide pH range. Figure 1 shows the pH profile of the enzymes in BioCore<sup>®</sup> Dairy and BioCore<sup>®</sup> Dairy Ultra.

Between 30 and 50 million Americans suffer from dairy intolerance, which leaves them unable to enjoy dairy products, or benefit from the many nutrients found in them. This digestive disorder is especially concentrated among African Americans and Asians where 75% of African Americans and 90% of Asians cannot properly digest dairy products. Dairy intolerance is typically associated with symptoms of nausea, bloating, cramping, gas and diarrhea after intake of dairy products. Dairy intolerance comprises two parts: lactose intolerance and milk protein intolerance. Lactose intolerance occurs when the body cannot produce the enzyme lactase in the quantities needed to break down lactose. The incomplete digestion of proteins found in milk causes milk protein intolerance.

The symptoms of nausea, cramping, bloating, gas and diarrhea that accompany dairy intolerance are typically self-diagnosed as lactose intolerance, so much so that the two terms are often considered synonymous. Many health care practitioners will

### BioCor<sup>e</sup>® DAIRY Supplement Facts

Serving size: 105 mg

Amount per serving	% DV
BioCore <sup>®</sup> Dairy	105 mg
Protease (from <i>Aspergillus niger</i> and <i>A. oryzae</i> )	630 BLGU *
Lactase (from <i>Aspergillus oryzae</i> )	1,000 ALU *

### BioCor<sup>e</sup>® DAIRY ULTRA Supplement Facts

Serving size: 108 mg

Amount per serving	% DV
BioCore <sup>®</sup> Dairy Ultra	108 mg
Protease (from <i>Aspergillus niger</i> and <i>A. oryzae</i> )	630 BLGU *
Lactase (from <i>Aspergillus oryzae</i> )	1,000 ALU *
Lipase (from <i>Candida rugosa</i> )	600 FIP *

Table 1

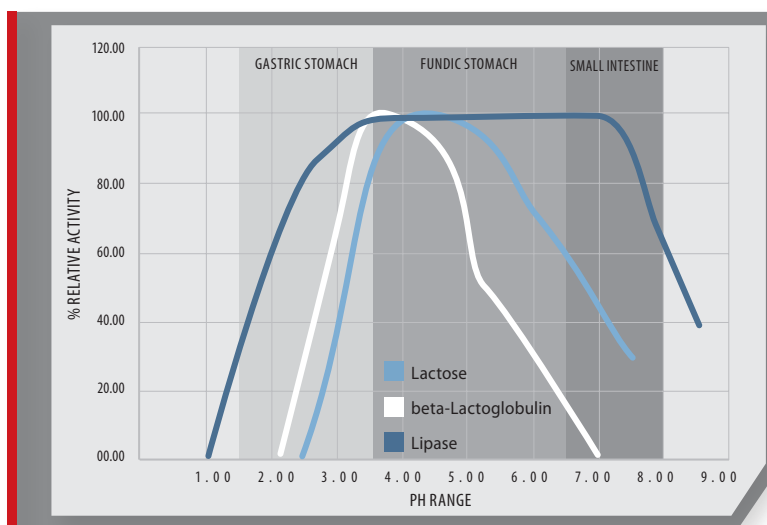


Figure 1

confirm that the terms dairy intolerance and lactose intolerance are usually not interchangeable and that many episodes of dairy intolerance are insufficiently treated as a lactose-only condition. Many people suffering from dairy intolerance use lactase-only products for relief but find them ineffective. This often means eliminating dairy products is their only option.

Biocore® Dairy is a combination of lactase and proteases designed to comprehensively treat dairy intolerance. The lactase in Biocore® Dairy will digest lactose and the proteases are optimized to break down milk protein. Information provided by the National Dairy Council shows that the major constituents of milk solids are lactose (4.8%), fat (3.7%), casein (2.7%) and whey protein (0.7%). This translates to 12 grams of lactose and 1.6 grams of whey protein in a glass of whole milk.  $\beta$ -lactoglobulin forms a major portion of whey protein and is mostly responsible for milk protein intolerance. This protein is especially resistant to acid hydrolysis and is not very easily digested by either pepsin or pancreatin. Our studies show that the proteases in Biocore® Dairy are vastly superior in hydrolyzing  $\beta$ -lactoglobulin to either

pepsin or pancreatin. One dose of Biocore® Dairy digests all the lactose and milk protein found in one cup of whole milk.

Biocore® Dairy is the evolutionary development of all other lactase formulas found in the marketplace today. It will not only mitigate lactose intolerance but will also break down milk protein to provide complete relief from dairy intolerance.

Biocore® Dairy Ultra is a proprietary blend of protease, lipase and lactase enzymes designed to enhance the digestion of dairy products. Biocore® Dairy acts to digest not only lactose but also fats and acid stable  $\alpha$ -lactoglobulins, which may contribute to dairy intolerance. Biocore® Dairy Ultra can be a stand alone or an important part of any broad-spectrum digestive formula and meets the unique needs of individuals that experience difficulty digesting dairy products or who have diets high in dairy.

*The information contained in this rationale is intended for educational purposes only. It is neither to be used to market or advertise a product nor to make labeling claims. The FDA and FTC have strict regulations concerning how information can be used in promoting a dietary supplement, and it is recommended that adherence to these regulations be followed.*