By Scott Hewitt CEO and Vincent R. James Ph.D. CTO
Community BioRefineries,

Our Bioreaction blog tells the stories of our journey from the simplest to the most complex discoveries made by the Community BioRefinery that will change the way the world looks at 'carbon neutral world' – and how the Community BioRefinery seeks to 'feed and fuel the world'. Our Bioreactions involve a process that leads to chemical transformations from food to fuel and everything in between.

A "bioreaction" (in biochemistry terms) includes five types of general chemical reactions. They include: Combination synthesis; Decomposition; Single displacement; Double displacement; and Combustion. (Don't worry; there won't be a quiz...)

Protein and Nutraceuticals

Pure Protein Isolates (90%+ pure)

Corn, Soy, Rice, Hemp, Barley, Tomato, Camelina Protein Isolates EXPAND: Corn Protein Isolate (CPI). CPI is the key and premiere product of our CBR Applied Technologies. CPI is a "new" * food protein that will offer a higher quality protein for our world's food supply. This new protein has never before been available to the food and nutraceuticals industries. Because Corn Protein Isolate is tasteless and odorless, CPI will allow higher quality protein to be incorporated into our foods, giving them the nutrition of milk or meat without adversely affecting the taste, mouthfeel, or odors of such foods. CPI will also reduce the caloric content and boost the nutrition and digestibility of food products into which it is added. In addition, this new protein is loaded with antioxidants. It will dramatically increase the shelf-life of foods into which it is blended, and this alone could potentially save the food industry billions of dollars each year in food wastes. Finally, Corn Protein Isolate will provide revolutionary new health benefits never before available to the food and health industries.
* **Note:** We say "new" because corn protein is hardly new; however, it is new to the food industry because it has never (until now) been able to be retrieved from corn without damaging or destroying it.

Superior Soy Protein Isolate (SPI).

Similar to the production of our Corn Protein Isolate product, Community BioRefinery's applied technologies can also extract and purify soy protein isolates from whole soy beans without cooking or steeping or without the use of harsh acids during the production process. The resulting SPI will offer a new, superior soy protein isolate having a protein purity of 90%+ and which is not denatured, is tasteless and odorless, and contains higher nutrition and functionality over traditional soy protein isolates. It also contains higher natural isoflavones and no off-tastes. Because of these traits, CBR's SPI can bring a premium price in the market place. Because of the versatility and modularity of our Applied Technologies, we will be able to produce protein isolates from multiple feedstocks, (e.g., corn, soy, rice, barley), in the same true BioRefinery facility using the same process equipment.

Essential Amino Acids

CPI possesses many of the essential amino acids required for human health but is deficient in others. Likewise, SPI has many essential amino acids but is also deficient in others, but different from CPI. A careful blend of CPI and SPI creates a protein isolate product possessing ALL the essential amino acids and can, therefore, be used in virtually any food products made available to the general population. Such a blend is a true 'nutraceutical', discussed below.

Rice Protein Isolate (RPI).

The true BioRefinery's Applied Technology allows us to extract protein from rice without cooking or steeping – or, without using harsh chemicals in the production process. Similar to the effects that the CBR's applied protein technologies have on corn and soy proteins, our process provides the same beneficial effects to rice proteins. Since each CBR can process multiple feedstocks, including rice, the demand for rice protein isolate due to its hypo-allergenic traits, will expand through our Applied Technologies.

Hemp Seed Protein Isolate (HPI).

HPI is a key and premier product of our Applied Technologies. HPI is a new food protein that will offer a higher quality protein for our world's food supply. Until very recently, no one had been allowed to do R&D or "work" with hemp/cannabis in the US. Fortunately, scientific studies overseas discovered very high-quality protein contained in hemp seed, similar to that found in tomato seeds.

Nutraceutical Consumer Products

Nutraceuticals are food products that have properties which enable the food to behave like a medicine (e.g., lower blood sugar; lower blood pressure; lower cholesterol, etc.). Today, consumers are becoming increasingly aware of the dietary diseases related to obesity, diabetes, coronary, and strokes and our foods and their nutritional content are becoming suspect as the primary contributors to these problems. In the 70's and 80's, supplementing diets with protein meant bodybuilding; but today, consumers are giving credence to having higher quality protein in diets with the increasing demand for milk, soy, rice, and casein proteins. This has caused the demand for functional foods to increase to well over $30 billion.

Bio-Medical Applications.

The Community BioRefinery's processing sequence has resulted in the recovery of protein isolates and vegetable oils with nutritive properties not seen in recent history. For example, the New Corn Hybrid ("Heart Friendly) is a descendant of the maize consumed almost exclusively by the Mayans for centuries. That is no longer possible with today's version of corn; most of its nutritive properties have been lost over the years from a long sequence of artificial hybridizing. The Heart Friendly corn is considered to be a "whole food," capable of sustaining life all by itself (such as mother's milk). The Community BioRefinery process can not only deconstruct this corn (and other grains) and leave its components "pristine", but can also recover specific proteins.

For more in-depth information please see our website. Community BioRefineries