The Development of EpiCor®

While a relatively new entry into the healthy products category, EpiCor, a clinically-proven human immune balancing ingredient, owes it success to discoveries made decades ago in animal health.

History

Diamond V Mills, Inc.(DVM) Cedar Rapids, Iowa, has been manufacturing yeast fermentation ingredients for the livestock and companion animal markets since 1943. C.W. Bloomhall started Diamond V after retiring from a wet corn milling company now called Penford Products. Mr. Bloomhall grew up on a farm and had observed that the livestock on his farm, primarily hogs, that were fed soured milk, cream, and food scraps seemed to perform better and the animal's overall appearance was "healthier looking." Performance for a farmer is anything that impacts his costs. For example, faster weight gain means that hogs get to market faster and thus require less feed. A decrease in illness helps with faster weight gain and less antibiotics usage. Healthier animals also lead to more hogs surviving and reaching market weight.

When Mr. Bloomhall retired from Penford his idea was to manufacture a product for livestock that would produce the same results he observed on his farm. It was reasonable to assume that fermentation was taking place with the soured milk and cream so he developed a yeast fermentation process to simulate the natural fermentation taking place on the farm. The process today is called DiaMatrix™. The product(s) developed from the DiaMatrix process are called Yeast Cultures.

The DiaMatrix process is complex. Yeast are put into an anaerobic fermentor with proprietary nutrient solutions. Without oxygen the yeast cannot grow, and prepare for hibernation or death. As a result they excrete metabolites, vitamins, minerals, and other amino acids. The fermentation wort is then combined with cereal grains and put through a drying system. During the first part of the drying process fermentation continues with the cereal grains until the moisture level drops to a point where fermentation can no longer continue. This product is then ground and packaged. Depending on which Diamond V product used it is fed at a rate of 2-4 ounces per animal per day.

In 1943 there was no category defined within the animal feed market for Yeast Culture. Diamond V Mills led the way in petitioning the Association of American Feed Control Officials (AFFCO) to define and approve Yeast Culture as a feed ingredient. Since 1943, DVM scientists have conducted hundreds of animal studies and Yeast Culture has proven itself as a leading ingredient for the livestock and companion animal industries. Little did Mr. Bloomhall know in 1943

that his DiaMatrix process would have such an impact on human health too. Throughout Diamond V's history company executives were asked on many occasions why they didn't have a human product when it was so good for other animals? The answer was that while it made sense from a scientific perspective, Diamond V didn't have the expertise or the resources for a human company.

Diamond V's manufacturing employees belong to the Teamsters Union and the two parties have a very good relationship. In the late 1990's the Union came to Diamond V management and asked for a change in how vacation and sick days were administered. Vacation days were defined as planed time away from work and five sick days were granted annually for unplanned absences due to illness. If you did not use your sick days within the calendar year you lost them; they did not roll over to the following year.

The manufacturing employees made the argument that they were not using their sick days while everyone else in the company used their 5 days. The Union employees felt they were not getting as much time off. Of course this argument assumes that being sick is the same as "time off." However, it was a reasonable request and the manufacturing employee's time records were reviewed. In fact, the data from the review confirmed they were not using all their sick days. The obvious question then is….. "Why were they not getting sick?"

Company Reaps Significant Savings

About this same time health insurance premiums were skyrocketing with annual double-digit increases that were impacting profitability. Companies quickly began shifting the cost of healthcare to their employees. Today it is not uncommon to see employers pay only 80% or less of the premium while the employee makes up the difference along with any deductible and co-pays.

Exhibit 1

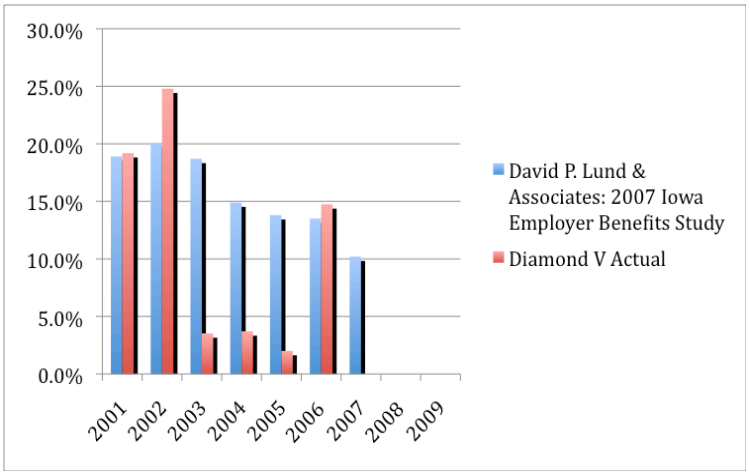

Exhibit 1: Diamond V premium percent increases from 2001 to 2007 compared to the David P. Lund & Associates: 2007 Iowa Employer Benefits Study for the same time period. Using the 2000 Diamond V family premium rate of $448 per employee, per month and calculating what the premium would be today based on the reported premium increases in the survey, Diamond V's premium would be $1,242, a 177% increase. Diamond

V's actual premium was $838 in 2007, an increase of only 87%, significantly less than what the survey showed other companies paying. If you assume Diamond V has about 135 employees on the family plan and there was a savings of $404 per employee per month that is a savings of $654,000 per year.

In Exhibit 1 there is no Lund Study data for 2008 and 2009. It also appears that there is no data for Diamond V for years 2007-2009. In fact the data does not appear on the chart because Diamond V's premium increase was a 0% for each of the three years. That's right; Diamond V has not received an increase in premiums since 2006.

While most companies were receiving double digit increases Diamond V's increase was staying well below average. Why? Years earlier, in order to save money on health care costs, Diamond V switched their insurance plan to a partially self-funded plan. This means that the company is responsible for paying all claims up to a certain level. After reaching or exceeding that level the insurance company then pays for claims. Based on an actuarial report for companies the size of Diamond V, claims dollars were paid into a pool each month. At the end of the plan year if Diamond V did not pay out all the funds in the claims pool the company would receive the balance. As it turned out Diamond V wasn't reaching the max claims. For many years Diamond V was receiving money back at the end of each plan year. The refunded balances were significant, some years $60,000 or more. Because there were not as many claims as predicted there was less paperwork for filing claims, etc. so administrative costs were also held in check.

Exhibit 2: Diamond V's claim history is significantly below the Blue Cross Blue Shield average. If you only consider Diamond V's claim experience in 2008 you'll see a savings of $1,459 per employee ($6,624 minus $5,165). Assuming 150 employees covered by the health plan (single & family) that resulted in a savings of $218,850 for just 1 year when compared to other companies.

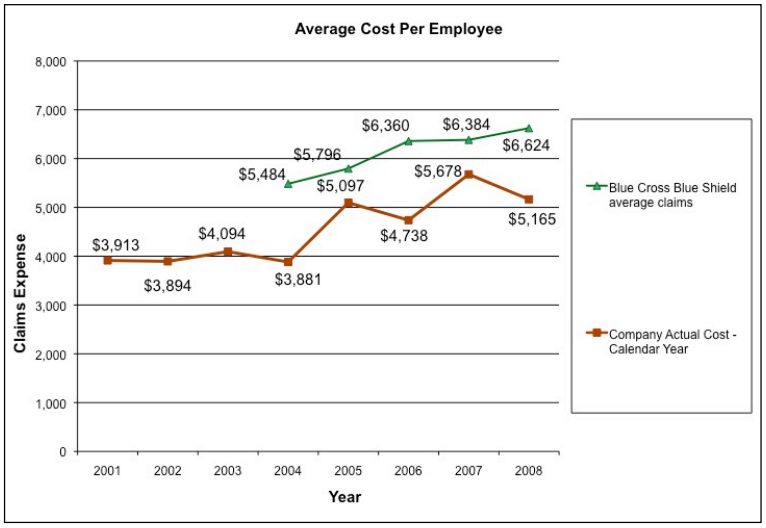

Exhibit 2

Serendipity: The Human Health Discovery

The fact that the manufacturing employees were not using their sick days combined with what Diamond V management was seeing with health care costs made the company seriously think about the DiaMatrix fermentation process. Could it be adapted to provide protection to humans? Diamond V could either invest in a new market; human health, if the technology proved itself out, or abandon plans to enter the human health market if the technology showed no benefit. To address the issues, Diamond V hired an outside consultant with expertise in the human nutrition and dietary supplement industry.

The first question asked by the consultant was, "is there something different with the manufacturing employees that kept them healthy?" In order to find out, a pilot study was conducted with employees of the manufacturing plant and as a control, a similar number of employees housed in a separate location from the manufacturing site. Blood and saliva samples were taken from 10 volunteers from the manufacturing group, "Exposed", and 10 employees in the office that were not exposed to the manufacturing process and their immune parameters were compared. To be consistent the two groups were age and gender matched.

Results:

1. The Exposed group had a lower Natural Killer (NK) cell count. Although lower, total cytotoxicity power of the NK cells was 1.8 times higher relative to the non-exposed. Conclusion is that the increased power of the NK cells protects the Exposed 1.8 times better relative to non-exposed.
2. The Exposed group had 14% lower levels of circulating immune complexes. This is beneficial as people with autoimmune disease have problems clearing their bodies of immune complexes and could be considered anti-inflammatory.
3. The Exposed group had about 68% higher levels of salivary sIgA. sIgA is an antibody in the mucosal system and is the first line of defense for our bodies.

Embria Health Sciences, LLC Founded

Once the efficacy of the fermentation process had been scientifically supported, Diamond V faced the challenge of making a product suitable for human consumption. In 2003, Embria Health Sciences (the human nutrition branch of DVM) developed a proprietary fermentation process and drying system known as MetaGen 4™, which was used to concentrate a human immune product, named EpiCor. Introduced in June of 2006, EpiCor, a unique immune balancing ingredient has been the subject of more than a dozen scientific studies demonstrating efficacy and safety.