



Colostrum: Immune-Tree vs. New Zealand colostrum

Dear consumer,

As a qualified business and technical consultant with considerable experience in this field, I am writing to present pertinent facts regarding the composition of New Zealand colostrum and to introduce you to colostrum products distributed by Immune-Tree, which I have found to be substantially superior.

My qualifications are derived from more than twenty-five years of senior management experience with Fortune 500 companies that develop, manufacture and market a variety of human and animal healthcare products, including diverse biologicals. I subsequently founded two biotechnology firms, one of which was focused in agribusiness, and, since 1986, have served as a business and technology consultant to many small and medium-sized companies in the human and animal healthcare fields. For the last ten years, a number of my clients have been focused on the human and animal applications of bovine colostrum and I have personally been responsible for highly diverse field study and testing programs with these materials, including licensure of products through the USDA. In addition, I have served as an expert witness in court cases based upon colostrum-associated issues. I hold a Ph.D. in Immunochemistry from Rutgers University.

During the last 5-7 years, dairy science has developed a deeper understanding of what bovine colostrum actually is and how it is formed. Numerous studies have now shown that colostrum formation in the cow begins several weeks prior to birth, accelerates as parturition nears and ceases upon the birth of the calf. At the time of birth, almost all of the biologically active components present in the udder were transferred from the circulation of the mother, while most substances found in later fluids are produced by cells within the udder itself. These factors, combined with the time of collection after birth, play a major role in establishing the quality of bovine colostrum. Removal of even a small quantity of colostrum immediately after birth, as would occur via suckling, results in a very substantial influx of a different fluid produced by the cells in the udder, known as transitional milk, markedly diluting the true colostrum. In addition, if the true colostrum is not removed from the udder during the first 6-8 hours after birth of the calf, the mother's system begins to reabsorb the biologically active components back into her circulation. Therefore, the only colostrum that contains all of the biologically active components in the appropriate proportions is that which is obtained at the first milking within six hours after birth. Major American dairy producers are keenly aware of this and most maintain maternity wards, separate from the main herd, to support the birth of their calves. They no longer allow the calf to suckle, but, rather, collect the complete colostrum within hours after birth and feed an adequate quantity to the calf. This contrasts sharply to the old-fashioned open pasture birthing methods applied in some other parts of the world, such as New Zealand, wherein the calf invariably receives an inadequate quantity of colostrum to effectively support its development and unnecessarily exposes it to a variety of disease-causing microorganisms.

A comparison of the characteristics of the colostrums used to formulate products from Symbiotics and Immune-Tree in light of the above discussion reflects the first major difference. Symbiotics loudly promotes that their colostrum is derived entirely from pasture-fed cows in New Zealand, that the calf is allowed to suckle after birth, and that collections from the first to fifth milkings are used. Immune-Tree uses only colostrum from cows in controlled domestic herds that have been certified to meet Grade A standards for milk and has been obtained only at the first milking within six hours after birth of the calf.

IGF-1 is a very important component of bovine colostrum that conveys significant benefits when the material is consumed by humans. The maximum amount of this component occurs in true first milking colostrum obtained within six hours after birth. Data from a study conducted by the Endocrinology Laboratory, College of Veterinary Medicine, Cornell University, comparing the IGF-1 levels in various lots of products from these manufacturers clearly reflects the impact of the different collection methods on product quality. The products from Immune-Tree yielded consistent values that reflected a high quality colostrum while the values observed with the Symbiotics' products were inconsistent and, in some cases, were approximately 50% lower than what would be obtained with properly collected first milking bovine colostrum.

| <u>Manufacturer</u> | <u>IGF-1 Form</u> | <u>(ng/ml)</u> |
|---------------------|-------------------|----------------|
| Complete Colostrum | Liquid | 499.10 |
| Immune-Tree | Capsule | 432.92 |
| | Capsule | 453.14 |
| | Powder | 456.94 |
| | Powder | 436.74 |
| Symbiotics | Capsule | 413.00 |
| | Capsule | 228.86 |
| | Powder | 295.80 |
| | Powder | 274.70 |

Another major difference between the products marketed by Immune-Tree and Symbiotics is reflected in their chemical composition. This was directly compared in a head-to-head study conducted at Minnesota Valley Testing Laboratories, a premier dairy testing laboratory. A comparative assessment of protein, fat, lactose, casein and albumin content was done on multiple lots of the products. These components were selected since their concentrations and relationships change with time after birth and, thus, are indicative of the quality of the colostrum used in a product.

The data clearly show the differences between these products. The chemical composition of the Immune-Tree products is almost identical to that of the reference colostrum preparation, while the products from Symbiotics show almost no similarity. These findings reflect Symbiotics' claim that they remove most of the fat from their colostrum during processing since they believe that it contributes nothing to the composition and its presence leads to increased rancidity and product deterioration. These statements are contrary to accepted scientific findings. First, colostrum fat contains several fat-associated and fat-soluble components that are beneficial and are removed upon

defatting the material. In addition, increased rancidity due to fat content is a characteristic associated with liquid preparations. There are numerous studies that demonstrate the protracted shelf-life of properly dried colostrum preparations without the development of rancidity.

It should also be noted that removal of the fat component will cause a shift in the chemical profile of the product, creating the illusion that it contains a lot of protein. This occurs because the values are reported based upon the amount of total solids present. In reality, the powders from Symbiotics contain less total protein than the other tested materials.

One additional factor of note is the relationship between the amounts of casein and albumin in these preparations. After birth, cells in the udder begin to produce more casein than albumin and the ratio of these components will shift with time such that the ratio of casein to albumin will exceed 1.0 at about 8-12 hours after birth. The data indicate that the colostrum used to produce the reference preparation and the products from Immune-Tree were collected within 6 hours after birth while the colostrum used to produce the Symbiotics products was obtained an average of more than 24 hours after birth.

I hope that you found this information to be useful and that you will give due consideration to the colostrum products distributed by Immune-Tree. As a business man, I am sure that you share my concern about the rhetorical claims made by companies that have little or no basis in actual scientific fact and that you also find them confusing.

To your good health - always.

Sincerely,
Alfred E. Fox, Ph.D.

Dr. Alfred E. Fox holds a Ph.D. from Rutgers University in Microbiology (Immunochemistry) and has more than 25 years of senior management experience at Carter-Wallace, Baxter Dade Division and Warner-Lambert, where he was responsible for research and development and regulatory affairs. He was also the founder and president of two biotechnology companies focused on agribusiness and environmental monitoring, respectively. For the past 15 years, Dr. Fox has been the President of Fox Associates, a business and technology consulting firm serving small- to mid-size companies in the human and animal healthcare fields. He focuses primarily on marketing and regulatory issues and for the past 10 years has continuously consulted to bovine colostrum manufacturers, where he has gained regulatory approval for their products, been a technical advisor, helped design and develop marketing strategies and served as an expert witness in legal matters.