

Abstract

Lactoferrin content of colostrum obtained from cows within 24 h after parturition was measured using a single radial immunodiffusion test and was compared among cows of two dairy breeds (Holstein-Friesian, Jersey) and two beef breeds (Japanese Black and Japanese Brown). Average lactoferrin content in colostrum of dairy breeds was 2 mg/ml and in colostrum of beef breeds was .5 mg/ml. Lactoferrin content of colostrum due to lactation number was also different among breeds. In dairy breeds, multiparous cows had lactoferrin content two to three times higher than that of primiparous cows; beef breeds showed no obvious differences between lactation years. Lactoferrin content also varied considerably within breed. In beef breeds, half the cows had values of nearly zero. Transferrin content in colostrum was fairly constant (.9 mg/ml) and was not as variable among and within breeds. There was no correlation between lactoferrin and transferrin contents in colostrum. Examination of cows lacking lactoferrin suggested that transferrin plays an important role as an iron carrier from a cow to her newborn calf.

Key words: [lactoferrin](#), [colostrum](#), [breed](#)

No full text is available. To read the body of this article, please view the PDF online.

Colostrum & Lactoferrin

[Click Here For Colostrum & Lactoferrin Supplements](#)

Colostrum

Colostrum is the **pre-milk fluid** produced by female mammals in the mammary glands just before they give birth. While it is technically not milk at all, colostrums is often called "first milk" as **it is obtained in the first milking after birth**. Birth is the triggering even that ceases colostrum's production in the mother and signals the body for the milk to come in or for the mammal "to freshen."

Colostrum is the fluid held in the mammary tissue until either the:

- 1) Newborn nurses
- 2) Mother reabsorbs the nutrients or
- 3) The Colostrum is harvested

After the first milking, the fluid begins to change into milk, containing less colostrum and more milk as time passes. **This transitional period lasts 2-3 days**. This fluid is referred to as *transitional milk*. In all other mammals other than humans, colostrum is crucial to the survival of the newborn. This is because of the **high concentration of immune factors that are transferred through the colostrum**. In humans only, some immunofactors are transferred through the placenta. The colostrum is still very important, but if the newborn baby does not receive the colostrum, death is not eminent, as it is in all other mammals.

Timing is also very important. If the calf, foal, puppy, etc. experiences difficulties at birth and is unable to nurse for 12 to 18 hours, it will probably die. This is due to the re-absorption of immune-factors by the mother. It is actually more humane and beneficial for the newborn for the colostrum to be harvested as soon as practical after birth and then bottle-fed to the newborn for the first day of life. This allows the newborn to receive excellent quality colostrum during the critical first 24 hours of life. **Unless the colostrum is harvested immediately after birth, the quality is greatly compromised.**

All of the nutritional benefits (vitamins, minerals, essential fatty acids, etc.) of breast milk and colostrum are not really applicable to supplemental forms. **Breast milk is the infant's only food** and they may consume several pints a day. The small amount of colostrum in a supplement does not supply adequate amounts of these nutrients for an adult. The focus of colostrum as a supplement is

the immunofactors, which are not required in huge amounts to stimulate and support the immune system.

History of Colostrum

Since the beginning of time, man has observed that **newborns fare better, live longer, and have fewer illnesses if they were able to obtain their mother's first milk**. In America, the Amish celebrated the beginning of a new life when a calf was born. After the calf's first feeding, they harvested the colostrum (first milk) and prepared a pudding from it for the whole family to enjoy. The Amish noted for decades the health benefits of such a ritual. It appears that the ritual was eventually lost or replaced.

In India, where cows are sacred, colostrum is still delivered to the doorstep along with the normal milk delivery. **When illness strikes a household, colostrum is often the first medication used by the family.**

The way we view life and health has changed dramatically over the last hundred years. So have our lifestyles and our morality. In America, and more recently in other parts of the world, we have become a quick-fix, disposable society. Convenience and self-indulgence have become a mainstay of our lives.

As our grandparents and parents become older and die, so do many of the traditions that they passed on through generations. We have often chosen to forsake tradition for convenience and self-indulgence. **As a society, we are continually looking for the easy way out.** This quick fix philosophy has resulted in the gradual erosion of tradition.

Breast Milk: A Perfect Food

In humans as well as other mammals, a newborn's very first meal of colostrum is of great significance to its health and well-being for the rest of its life. **The immune system of the newborn is not fully developed**, making it highly susceptible to numerous pathogens, antigens and allergens. **Colostrum provided in breast milk contains all the needed immune factors that are essential to activate, regulate and balance the immune system.** This is of great significance as the newborn's own system develops.

Mother's milk provides the perfectly assigned, individualized nutritional food to promote passive immunity and proper growth and development. As mammals grow, essential *glycoproteins* in breast milk keep the immune system functional.

Nutritional Support + Immunity

Mother's milk provides both immunity (passive and active) and nutritional benefits. The lipids, carbohydrates, amino acids and other nutrients provide the baby with ideal nutrition and, therefore, enhance the overall health of the baby. Colostrum provides rich immune factors to sensitive newborns that cannot yet fend for themselves. *Peyer's patches*, found throughout the intestinal tract, and groups of immunoactive cells in the bronchial mucosa that destroy allergens, antigens and pathogens, **are not yet operative in the newborn.**

Colostrum contains antibodies against *E. coli*, *Salmonella*, *Shigella* v. *cholera*, *Bacterioides fragilis*, *Streptococcus pneumoniae*, *Bordetella pertussis*, *Clostridium diphtheriae*, *Streptococcus mutans*, *Clostridium tetani* and *Candida albicans*. Breast feeding was also found to be effective against the hepatitis C virus (HCV). Research shows that **both anti-HCV antibody and HCV-ribonucleic acid are present in colostrum.**

Babies deprived of breast milk are simply not as healthy as those who are breast-fed. Non-breast fed babies develop eczema, food and upper respiratory allergies and gastrointestinal problems at a much higher rate than breast-fed babies do. **Acquired maternal antibodies are also transferred through breast feeding and will protect the baby.** If the mother has contracted a disease such as measles, pertussis, or mumps, sometime prior to pregnancy, she has developed antibodies against them making her immune to re-infection. **These antibodies are passed on in her breast milk to**

protect the baby from contracting these conditions while breast feeding. This is a most critical time of growth and development. Breast-fed babies who do contract these conditions later will experience a milder condition with far fewer complications compared to non-breast-fed babies.

Protection from Allergies, Inflammatory and Autoimmune Diseases

Researchers hypothesize that the natural auto-antibodies in colostrum and milk may contribute to the selection process of physiological development during the early postnatal period in breast-fed infants. This could explain the lower frequency of allergic, inflammatory, autoimmune diseases and lymphomas which are seen in individuals who were breast-fed as infants.

Colostrum Benefits Infants with Diarrhea

Studies report colostrum helps manage infants with chronic diarrhea. In eight children with chronic diarrhea, ranging from nine months to three years of age, *E. coli* was present in all eight cases. *Ascaris lambricoidis* in four, and *Giardia lamblia* in one. All eight children were given 20 ml. of fresh human colostrum daily for seven days. In addition, those who had giardiasis received metronidazole treatment, while cases with ascariasis were given antihelminthic therapy. The results indicated that colostrum provided effective antidiarrheal action in some patients with chronic diarrhea of infective origin.

Growth Factors

Studies show the activity of *human* colostrum in **stimulating DNA synthesis was 20 times greater** than that of bovine serum. **The activity of growth factors in human colostrum was higher than that in human milk or bovine colostrum, and only human colostrum contains two different kinds of growth factors:** *CAGF*, an epidermal growth factor, and *CBGF*, a platelet differentiation growth factor.

Promotes Development of Infant GI tract

Following birth, the infant gastrointestinal tract (esophagus, stomach and small intestine) undergoes profound growth, changes and functional maturation. These changes are apparently related to the onset of colostrum ingestion, because starved or water-fed newborns showed little changes in the GI tract. This is due to the hormones and growth-promoting peptides, such as insulin, cortisol, *epidermal growth factor* (EGF) and *insulin-like growth factor 1* (IGF-1) found at high concentrations in the maternal colostrum.

Human colostrum contains high concentrations of *motilin* and *gastrin* (hormones that stimulate the flow of gastric juices and cause bile and pancreatic enzyme release). **Motilin and gastrin concentrations in human colostrum are the highest** compared to human mature milk, cow colostrum and cow mature milk. The difference in motilin concentration is very significant between human milk and cow milk. These components in colostrum can also be used therapeutically for premature infants or newborns with immature or diseased GI tracts.

Breast Milk Linked to Low Cholesterol

Breast-fed babies may be less likely to have elevated cholesterol levels as adults. A study of four-month-olds found differences in the way formula-fed infants produce cholesterol, which is crucial for the brain's development. Breast milk has six times more cholesterol than formula, and formula-fed babies respond by producing their own. Despite the increased production, formula-fed babies still have 40% less cholesterol in their blood. **The formula-fed babies are receiving inadequate cholesterol causing them to produce it.** This increased cholesterol production during infancy may have an "imprinting effect" that persists later in life, meaning that formula-fed babies may suffer from higher cholesterol levels as adults.

Lactoferrin

Lactoferrin, a bioactive glycoprotein, is one of the body's own most powerful immune-defensives. While it is found in breast milk, Lactoferrin is found in tears and in other body fluids located at body openings—the oral and nasal openings—the oral and nasal cavities, GI tract, genitourinary tract and respiratory tract. **Lactoferrin is the first line of defense for any opening in the body.** It is also found in small quantities in most body fluids such as **saliva, tears, nasal secretions, intestinal fluids** such as bile and in secondary granules of white blood cells called *neutrophils*. **It is synthesized by mucosal lining** (such as in the mouth and intestinal tract) and by neutrophils, and is **released by these cells in response to inflammatory stimuli.** Very low physiologic serum levels of lactoferrin increase significantly upon infection.

Receptors for lactoferrin have been detected and isolated on activated T- and B-cells, monocytes, intestinal brush border cells, platelets and neoplastic cells.

The benefits of lactoferrin include:

- * Binds and transports iron within the body**
- * Beneficial for iron-deficiency anemia**
- * Provides unfavorable conditions for growth of certain harmful pathogens which need iron for proliferation**
- * Promotes intestinal cell growth (enhances nutrient digestion)**
- * Activates and regulates the immune system**
- * Produces or stimulates production of antibodies, interleukins, killer cells and other white blood cells**
- * Enhances phagocytosis, cell adherence and controls release of pro-inflammatory cytokines such as IL-1, IL-6, and TNF-alpha**
- * Provides unfavorable conditions for growth of certain harmful microorganisms (inhibits binding activity)**
- * Acts as an antioxidant diminishes the damaging effects of free radicals**
- * Promotes maturation of immature T- and B-cells**
- * Controls cellular immune response and inhibits manifestations of autoimmune response in mice**
- * Helps speed healing of wounds**
- * May have value for individuals with breast cancer**
- * Potentially benefits patients with bleeding disorders as a preoperative immune-modulator**

Functions and Aspects of Control

Lactoferrin is closely related in structure to the plasma iron transport protein *transferrin*. **The ability of lactoferrin to bind to excess iron ions, prevents the growth of bacterial and viral microorganisms and tumors, as iron is needed for their growth.**

Lactoferrin also **inhibits viral attack through its ability to strongly bind to the envelope protein**. This prevents cell-virus fusion as the binding domain is shielded. Another major function of lactoferrin is its **ability to stimulate the release of neutrophil-activating polypeptide interleukin 8**. This suggests that lactoferrin may function as an immune-mediator for activating the host defense system. Lactoferrin is implicated in particular in the control of immune functions and cell proliferation.

Researchers examining its involvement in cancer progression report that lactoferrin has a significant effect on *natural killer* (NK) cell cytotoxicity against certain cell lines. They also showed that lactoferrin has a normalizing effect by **inhibiting cell proliferation** by blocking the cell cycle progression.

Many other functions are attributed to lactoferrin. These include **antibody synthesis, regulation and control of the production of interleukins, lymphocyte proliferation and complement activation**, but the action of these functions is not fully understood. It has been suggested that **lactoferrin may contribute to T-cell proliferation**. Lactoferrin **regulates the iron** which at low concentrations is inhibitory to T-cells. Lactoferrin may also have a protective function over structures such as *macrophages* and *lymphocytes*.

Lactoferrin and Inflammatory Response

One of the major benefits of lactoferrin is its **ability to reduce inflammation** through the regulation of inflammatory cytokines such as *interleukin-1* (IL-1), *interleukin-6* (IL-6), and *tumor necrosis factor alpha* (TNF α). These are a large group of chemicals largely produced by T-cells. Lactoferrin is a good inducer of IL-6 and TNF α production. Each one acts on a particular group of cells. While they are necessary in certain situations, too much of even a good thing can be damaging.

The problem is that high levels of these substances are seen in individuals with inflammatory autoimmune conditions such as rheumatoid arthritis, lupus, asthma, allergies, etc. Overproduction of IL-6 may explain many of the symptoms of these conditions; specifically, in individuals with rheumatoid arthritis. **IL-6 is produced by the synovial fluids** and contributes to inflammation, tissue damage and pain.

Supplemental Lactoferrin

In most colostrum dietary supplements, the lactoferrin content is not sufficient unless additional amounts are added. A newborn calf will ingest a half-liter or more of colostrum at its first meal and will therefore receive an adequate amount of lactoferrin. Most colostrum supplements, even at high doses of up to 2 grams per day, contain less than 2% of the lactoferrin that a newborn receives. It is far better to **take the highest quality colostrum obtainable** and to be sure that it is supplemented with **additional lactoferrin** to receive the correct balance.

Lactoferrin works on contact and is therefore best utilized if taken into the oral cavity (mouth) so it can begin working right away. Fortunately, the numerous immune factors found in colostrum and lactoferrin are transferrable from one species to another. This means that humans can benefit from the immune-rich colostrum and lactoferrin from cows. **Colostrum from cows is much richer in immune factors than that of humans. Human colostrum contains only 2% IgG** (the body's most important immunoglobulin) while **bovine colostrum contains 86% IgG**. A variety of colostrum-lactoferrin supplements derived from bovine colostrum are now available for use by adults and children. These can be found in the form of powder, capsules, tablets, chewables, lozenges, liquids, creams, sprays, etc.

Infants and Children

Ideally, women should breast-feed as long as possible. But some women are unable to breast-feed their newborn or cannot breast feed for the entire first year due to mastitis or other reasons. The benefits of colostrum can still be obtained through colostrum supplementation. By supplementing your bottle-fed child with an excellent quality, pure, unadulterated, liquid bovine colostrum, is still possible to obtain many of the immune and growth factors so important for proper development.

If the following regimen is adhered to each time your infant drinks, you will help to ensure proper immunity, brain and gastrointestinal development for your infant. This is an excellent way to supplement the diet for infants that are unable to breast-feed.

Birth to 6 Months: Add 1 drop/day of liquid colostrum in formula, water or vegetable juice. If the infant is in any type of distress, add 1 drop/feeding until distress is gone and then continue 1 drop/day.

6 Months to 1 Year: Add 2 drops/day in formula, water or juice. If the infant is in any type of distress, add 2 drops/feeding until distress is gone and then continue 2 drops/day.

Over 1 Year: Add 3 drops/day for each year of age. If in distress, use 3 drops/feeding for each year of age.

After age two, or when the child is old enough, you can start them on a regimen of colostrum/lactoferrin lozenges to continue the process. Excellent quality lozenges are available through most fine health food stores. If you can **find a product that combines both colostrum and lactoferrin** in an oral delivery it will save time and effort while providing the best for your child. A maintenance dose of **one lozenge daily** should provide adequate protection. **At first sign of illness, you may safely increase the intake to 2 to 4 lozenges daily.** The liquid may also safely be utilized.

Adults

All mammals build immunity during their lifetime based upon the pathogens they come in contact with. If a mammal grows up in a sheltered environment free of toxins and pathogens, its immunity will be much lower (weaker) than a mammal growing up in close proximity to other mammals and therefore numerous pathogens. Remote tribes all over the world were all but eliminated when explorers came into their camps and accidentally introduced a common form of influenza. Since the tribes had never encountered the flu, **they had no immunity to fight it off.**

Back to Basics

For years bovine colostrum was used as a folk remedy in Scandinavian countries. This changed in the 1950's when all the "highly sophisticated, medically-advanced" miracle drugs came into the picture. **People chose to ignore older, traditional methods that clearly worked.** Colostrum contains many complicated factors which work together. It does not have just one easy-to-describe mode of action, like penicillin.

Current Medical Environment

The prevalence of AIDS, immune disorders such as Lyme disease, Epstein-Barr (chronic infectious *mononucleosis*, sometimes called *Chronic Fatigue Syndrome*), Fibromyalgia, Candida-related-Complex, Herpes Simplex, and various autoimmune disorders have forced us to learn more about our immune system, our health in general and the effect of negative lifestyles. These immune disorders have caused us to review all the nutritional options. One of these is the use of supplemental colostrum and lactoferrin.

Colostrum was specially designed by nature to:

- Protect
- Activate
- Regulate
- Support our immune system

Protection

Immunoglobulins

Colostrum contains all four of the key immunoglobulins: IgM, IgG, IgA and secretory IgA. These immunoglobulins are equipped with special adaptive sites which are effective at neutralizing a wide range of bacteria, viruses and yeasts. They include antibodies specific to fight pathogenic microorganisms.

Colostrum provides specific antibody reactivity to bacteria, viruses and yeasts. Most infectious diseases enter the body through the mouth or remain localized in mucosal surfaces, primarily the stomach and intestinal tract. We must be able to combat disease-causing organisms where they attack us.

Fortunately, colostrum helps us do that. Most of the colostrum antibodies are believed not to be absorbed and digested but to remain in the intestinal tract after being swallowed where they fight off intruders. It is commonly assumed that the digestive enzymes in the stomach and intestines would break up or digest the immunoglobulin-protein molecules in colostrum when ingested; research has shown, however, that **colostrum contains a powerful trypsin inhibitor and a number of protease inhibitors that protect the immune factors from breaking up.**

The major benefits of immune factors in colostrum and lactoferrin occur within the mouth, stomach and on the intestinal and bronchial walls, and not as a result of their passage into the tissues. This means if the majority of immune enhancing benefits occur in these locations, colostrum can benefit people of all ages. Added support can make a tremendous difference where the immune system is marginal or below marginal.

Leukocytes (White Blood Cells)

Colostrum contains living white blood cells which protect us from a variety of pathogens. Neutrophils and macrophages are the most prominent cells in colostrum. Lymphocytes are also present, predominantly T-cells, which produce interferon and other protective factors.

Safe Protection

Dozens of scientific papers suggest that colostrum can block or reduce the severity of a wide variety of infections including many which have their initiation in the oral/fecal route. Colostrum is effective against a number of microorganisms including the following bacteria: *E. coli* (including 0157 strain), *Streptococcus pneumoniae*, *Clostridium difficile* toxins A and B, *Vibrio cholera*, *Salmonella*, *Shigella*, *Bacterioides fragilis*, *Bordetella pertussis*, and the following viruses: *Rotavirus*, *Respiratory Syncytial virus* (RSV), *Coxsackie*, *Echo* and *Alphaviruses*, *Poliomyelitis*, *Enteric*, *Hemagglutinating encephalitis*, *Herpes simplex*, and yeasts such as *Candida*.

Numerous researchers have demonstrated that colostrum has *bacteriostatic* and *bacteriocidal* effects against *E. coli*. *Peroxidase*, *lactoferrin* and *IgA*, all found in colostrum, are capable of creating powerful effects against *E. coli*. Oligosaccharides found in colostrum have been shown to block attachment of a wide variety of bacteria, especially *S. pneumoniae*, to mucous membranes, thereby aiding in the prevention of respiratory inflammations.

Clostridium bacteria are spore-forming and need no oxygen to live. The proliferation of this bacterium is believed to be predominantly the result of two toxins. Studies have shown that colostrum is effective in neutralizing these two *Clostridium difficile* toxins. Colostrum is effective against salmonella. Rota hyper-immune colostrum has demonstrated to effectively prevent the outbreak of diarrhea; however, it did not prevent immunological responses to natural rotavirus infection. Humans and animals exposed to *Respiratory Syncytial Virus* developed protective antibodies against this virus in the *IgG* and *IgA* classes. These protective antibodies were found in large quantities in colostrum, particularly those of the *IgG* class.

Since the 1970s we have known that bovine **colostrum is able to destroy Herpes simplex virus-infected cells.** Several studies have revealed that colostrum leukocytes proved to be effective in controlling the yeast infection *Candida albicans*. Researchers in Denmark reported that colostrum

tablets proved to be an effective treatment for oral Candida among HIV-infected individuals, given ten times-per-day for ten days.

Colostrum powder in capsule form **promotes the growth of *bifida* bacteria and other healthy flora in the intestinal tract**. These beneficial bacteria help maintain a homeostatic environment and help stimulate the musculature of the colon. A healthy intestinal microbial flora population also **promotes an improved and comfortable digestive tract and helps avoid gas and bloating**. Colostrum promotes a healthy intestinal microflora population, **enhances utilization of the nutrients in the foods we eat, and provides protection against enteric pathogens**. Therefore, it helps provide a stable, stronger defense against infection by pathogenic organisms, which especially seek a weakened host.

Activation

The oral cavity is loaded with receptor sites which, when activated, alert the entire body through a complex chain reaction of immune system events. Supplementing colostrum, of excellent quality from the first milking, in the mucosal membranes of the mouth triggers the chain reaction to occur throughout the body. This excellent quality colostrum can trigger a response that will reach all aspects of the immune system while colostrum which contains milking past the first milking may be less effective.

The first milking after the cow gives birth contains 2 to 2½ gallons, which is 100% colostrum (of which approximately ½ gallon goes to the newborn calf). The second milking contains only about 20% colostrum. The rest is considered *transitional* milk. If this, or any other milking, is mixed into the first milking, the delicate balance of colostrum components is destroyed.

Researchers only use first-milk colostrum of excellent quality in their trials so that if we expect to get the same beneficial results, we also need to use only first-milk colostrum. Only a small amount of excellent quality colostrum is needed to activate an immune response.

Regulation

Accessory Factors

Colostrum also contains immune-regulatory factors that enhance immune reaction when it is too low and suppress it when it is too high. Colostrum therefore could be a significant tool in assisting the body in regulating the immune system. This is important for conditions in which the immune system is extremely depressed, as in severe bacterial, viral and yeast infections and in cases where the immune response is generally excessive involving inflammation and destruction (autoimmune conditions such as rheumatoid arthritis, lupus, MS, and allergies).

Lactoferrin

Lactoferrin is the premier immune-regulator. Lactoferrin has powerful regulating effects on the production of inflammatory cytokines. An overproduction of cytokines is commonly seen in many autoimmune conditions such as allergies, asthma, arthritis, lupus and inflammatory bowel disease. Recent research suggests that lactoferrin may be very helpful to regulate this overproduction. Lactoferrin is an iron-binding protein. Individuals with an adequate intake of iron may not be able to use the iron effectively because they may not have high enough levels of iron-binding protein to facilitate iron transport. Iron deficient individuals experience weakness, headaches, tingling sensations in the hands and feet, brittle nails and lowered resistance to stress and disease.

Proline-Rich-Polypeptides

Colostrum contains a special *Proline-Rich-Polypeptide* (PRP) that serves as a powerful regulator of the immune system. PRP in colostrum increases the permeability of the skin vessels, which offers a regulatory activity, stimulating or suppressing the immune response. The ability to stimulate or suppress the immune response is highly significant. Suppressing the immune system is necessary to prevent the immune system from attacking the body itself, as in the case of autoimmune diseases

such as rheumatoid arthritis, lupus, MS, Alzheimer's disease, and allergies. Colostrum's suppressive action may help prevent this type of activity involved in autoimmune diseases.

This component of colostrum supplementation may turn out to be even more important than we now realize. We are only in the beginning stages of realizing the total potential of PRP and other colostrum accessory factors for the management of autoimmune/inflammatory conditions.

Support

Transforming Growth Factors

Transforming Growth Factors (TGF) are polypeptides which promote cell proliferation, tissue repair and maintenance (wound healing) and embryonic development. Bovine colostrum contains up to 100 times the mitogenic potency of human colostrum. Studies have demonstrated the anti-cancer ability of TGF I bovine colostrum in humans. This aspect of colostrum also makes it especially appealing for topical use. Conditions such as eczema, dermatitis, acne, possibly psoriasis and many other skin conditions could benefit.

Nucleotides

Nucleotides are important in cellular metabolism. The most important nucleotide in colostrum is AMP (*adenosine monophosphate*). Amp is a precursor for ADP (*adenosine diphosphate*) which is involved in cellular energy transfer. AMP plays a regular role in cellular metabolism and also mediates the traffic of hormones and other activators. Additional nucleotides in colostrum help metabolize carbohydrates.

Enhanced Nutrient Absorption

The elderly are at higher risk for illness and disease for a number of reasons. One is the obstacle of diminished nutrient absorption and nutrient deficiencies, which further weakens immunity. Enzymes, found in colostrum help the entire digestive process to aid in nutrient absorption and utilization.

Colostrum-lactoferrin supplementation is not just for individuals with severely compromised immunity or infants who cannot receive adequate amounts from their mother, almost everyone can benefit. Any individual wanting to feel his or her best by strengthening their immune system to ward off disease and illness can utilize a daily maintenance dosage of colostrum. As we get older, our immune system begins to show signs of weakening, so this becomes even more important. At the first sign of illness, one can increase the dosage to halt or weaken the infection.

Lactose Intolerance

Lactose-intolerant individuals can usually tolerate up to **about 77 mg. of lactose before a response is likely to occur. Poor quality colostrum contains higher levels of lactose compared to high quality colostrum.** The *sooner* the collection after birth, the *lower* is the level of lactose. **The level of lactose in colostrum doubles in just 24 hours.** Unfortunately, only a few companies report the levels of lactose contained in their product. The following information will allow you to determine acceptable lactose levels for lactose-intolerant individuals.

The amount of colostrum that can safely be ingested, without triggering a lactose intolerance response, that is based upon the quality of colostrum:

Excellent	Moderate	Poor
700mg	500 mg.	350 mg.

This is not the recommended dosage of colostrum. The above amounts are merely the *maximum* amounts that can safely be taken by lactose-intolerant individuals at one time. **Extremely good**

results for a variety of ailments can be achieved with as little as 125 mg. of excellent quality colostrum delivered in the oral cavity.

Abstract

Lactoferrin content of colostrum obtained from cows within 24 h after parturition was measured using a single radial immunodiffusion test and was compared among cows of two dairy breeds (Holstein-Friesian, Jersey) and two beef breeds (Japanese Black and Japanese Brown). Average lactoferrin content in colostrum of dairy breeds was 2 mg/ml and in colostrum of beef breeds was .5 mg/ml. Lactoferrin content of colostrum due to lactation number was also different among breeds. In dairy breeds, multiparous cows had lactoferrin content two to three times higher than that of primiparous cows; beef breeds showed no obvious differences between lactation years. Lactoferrin content also varied considerably within breed. In beef breeds, half the cows had values of nearly zero. Transferrin content in colostrum was fairly constant (.9 mg/ml) and was not as variable among and within breeds. There was no correlation between lactoferrin and transferrin contents in colostrum. Examination of cows lacking lactoferrin suggested that transferrin plays an important role as an iron carrier from a cow to her newborn calf.

Key words: [lactoferrin](#), [colostrum](#), [breed](#)

No full text is available. To read the body of this article, please view the PDF online.