Liposomal Delivery: the LD Advantage

Why this is so important for colostrum effectiveness

When a baby is born, the mother’s breast does not immediately begin producing milk. Instead it produces a yellowish fluid called colostrum, or foremilk. Colostrum is a highly nutritious substance with extraordinary health-giving qualities. It contains an amazing array of beneficial substances, such as Immunoglobulins (natural antibodies) which offer the infant increased protection from pathogens in its environment, modulators of the immune system to help the infant adapt to challenges, growth factors to complete the development of the gastrointestinal tract, and many other proteins, peptides, and cells that act in concert to protect the infant and prepare it for life in this strange new world it has been thrust into.

Colostrum, like milk, is produced by cells in the mammary gland, and like milk, it is expressed from the mammary cells. One of the components of colostrum, cell membrane fats or lipids, are secreted in tiny globules surrounded by a portion of the cell membrane from the mammary cell. This process is shown in Figure 1 which shows how a single secretory cell produces milk (or colostrum) fat globules by pinching off a globule from the cell membrane. The components the cell uses to produce the milk fat are taken up by the cell into small vesicles, which then are processed through the organelles of the cell, the Golgi apparatus and the endoplasmic reticulum, to produce the fat globule. The mitochondria provide the energy that drives the process, while the nucleus of the cell contains the DNA that codes all the proteins the cell produces in its organelles. The membrane surrounding the globule acts to protect the milk fat and colostrum molecules from the digestive action of the gastrointestinal tract until it reaches the intestine where it has the most benefit to the infant.
Commercially prepared colostrum powder has this protective membrane removed because the colostrum molecule is shattered and removed in the defatting, pasteurization, drying and/or freezing processes to produce powdered colostrum. In order to protect colostrum from human (post infancy) stomach acids and digestive enzymes, it is necessary to add back the phospholipid coating that was removed and to create phospholipid liposomes around the colostral components. This helps protect the colostrum as it passes through the stomach and delivers it to the small intestine where they can be of most benefit. Liposomes can also penetrate skin surfaces and carry colostrum components into the bloodstream for further delivery throughout the body to organs and cells for use as needed. Liposomes also help prevent oxidation of the product between the time of manufacture and its use.

Studies have shown that colostrum without Liposomal Delivery (LD) tends to clump together in the gastrointestinal tract, while colostrum with LD readily disperses for maximum absorption and effectiveness. Digestion studies comparing colostrum without LD to colostrum with LD show that Liposomal Delivery (LD) offers nearly 100% protection to IgG (immunoglobulin G) in the colostrum from being broken down by stomach acids and digestive enzymes; compared to almost a 50% destruction of immunoglobulin in colostrum without LD. Chemical studies have shown that the phospholipids in LD form liposomes, tiny spheres of lipid which enclose and protect the contents, in this case colostrum.

In addition to its protective effect, the phospholipids which make up LD have important physiologic effects as well. All the cells in your body are protected by a cell membrane made up of the phospholipids found in LD. They play an important part in maintaining cell membrane health and function by providing a
lipid “sea” in which important membrane proteins “float”. Problems can occur when these phospholipids are not present in the proper ratios. In nerve cells, for example, some chronic nervous conditions, such as Alzheimer’s disease, senile dementia and Parkinson’s disease, show improvement in symptoms following supplementation with phosphatidylserine.4-6 Down syndrome is also characterized by an imbalance in brain phospholipids.7

Phospholipids are helpful in counteracting the effects of stress, which in turn can affect the immune system and disrupt normal intestinal functioning.8-10 Phospholipids also play important roles in cell signaling—the way the interior environment of the cell communicates with the extracellular environment. These include growth inhibition, cellular differentiation and programmed cell death.11-13 As well, phospholipids play crucial roles in maintenance of the barrier function of the skin,14,15 antimicrobial defenses of the skin,16 protection of the stomach lining against ulceration,17,18 preventing Hepatitis C recurrence,19 blood clotting,20-23 and protein assembly.24

In short, LD provides not only an effective delivery system not available with any other colostrum but provides vital nutrients in its own right.
References


