International Journal of Farmacia

Journal Home page: www.ijfjournal.com

Immunize tablets: nature's antibody against cancer

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ABSTRACT

Colostrum, also known as first milk, contains therapeutic proteins and peptides that together appear to reverse changes in the signaling of the tumor micro environment that enhance cancer spread. Colostrum, a nutrient-rich fluid produced by female mammals immediately after giving birth, is loaded with immune, growth and tissue repair factors with dozens of biologically active peptides and proteins that affect genes and cell signaling. Several colostrum-derived biologics, such as human α-lactalbuminmade lethal to tumor cells and the human recombinant form of lactoferrin, shows promising results in clinical studies. Lactoferricinpeptide analogs are in early clinical development for cancer immunotherapies. In addition, milk proteins and peptides are well tolerated and many exhibit oral bioavailability, thus they may complement standard therapies to boost overall success incancer treatments

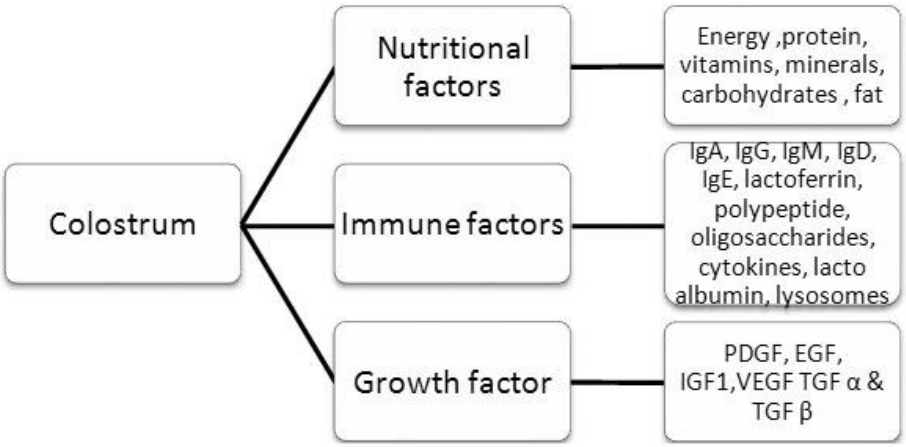
Keywords: Colostrum**,** Immunoglobulins, Immunity, Natural Food Supplement

INTRODUCTION

Colostrum is a natural product which is rich in macro- and micronutrients, and because of this, it is measured as a best natural food supplement**.** Colostrum is the first milk secreted at the time of parturition, is also the sole source of passive immunization because the colostrums is an excellent source of immunoglobulins and highly biological value proteins ,Growth Factor, lipids, carbohydrates, antioxidants, vitamins ,minerals and viable cells. A viable cell like neutrophils, macrophages secretes cytokines and antimicrobial proteins and peptides, such as lactoferrin, defensins, and cathelicidins. In view of so many health factor through Colostrum, the use of Colostrum has been extended to so many health problems like treatment of autoimmune disorders, gastrointestinal conditions, including non-steroidal anti-inflammatory drug–induced gut injury, H pylori infection, immune deficiency related diarrhea for all age group. [3-6]

Colostrum is the first milk secreted at the time of parturition, differing from the milk secreted later, by containing more lactalbumin, lactoprotein and also being rich in antibodies that confer passive immunity to the newborn. It lasts for 2- 4 days after the lactation has started. Colostrum play a vital role in passive immunization. There are three main primary component of Colostrum [1,2] Immune Factor, Growth Factor and Nutritional Factor.

Figure 1: Composition of Colostrum



Growth Factors [7,8]

They arouse growth, help in regeneration and accelerate the repair of aged original muscle, Skin, Collagen, Bone, Cartilage and Nerve Tissue. Growth factors also stimulate the body to burn fat for fuel instead of the body's muscle tissue in times of fasting and incline built.

Bovine colostrum (BC), which has been found to be almost indistinguishable to human colostrum in terms of its advantageous components with no side-effects. The use of bovine colostrum as dietary supplement has increased drastically over the past decades. Bovine colostrum is harvested within first few hours of calving from dairy animals. The herds of cows are kept under close supervision in good state of hygiene without exposure to antibodies, pesticides and anthelmintic. The colostrum collected within 24 hours contains maximum substances but less in amounts, colostrum collected later will be more but contain less immunoglobins. Research shows that colostrum can help to increase strength and endurance, Build lean muscle mass, Burn body fat, Boost immune function, Shorten recovery time and accelerate healing of injuries. Colostrum processing involves a series of steps planned to ensure product purity, potency, safety, and stability.

Milk Collection[9]

The source of colostrum is one of the most significant factors to consider when evaluating diverse brands of colostrum. Immediately after milking, the filled jugs are put in freezer and kept frozen until collection by plant. It is inspected by trained personnel and placed in a freezer and maintained at -5 degrees F +/- 5 degrees.

Raw milk Quality Control[10,11]

It is tested to verify that it is from the first milking and free of hormones and pesticides. The components for which constantly monitoring include PRPs, Lactoferrin, TGF (Transforming Growth Factor), IGF-1 (Insulin-like Growth Factor), IgA, IgG, and other immune and growth factors. High Performance Liquid Chromatography (HPLC) used to examine colostrum after collection and after processing to ensure that all components are intact and bioactive. Enzyme-Linked Immunosorbent Assay (ELISA) is employed in quality control, and manufacturing is performed under cGMP (certified Good Manufacturing Practices) and HACCP (Hazard Analysis and Critical Control Procedures).

Low Temperature long time (LTLT)

Pasteurization process that is extra effectual than standard pasteurization processes at maintaining biological activity. Pasteurization of dairy products are preserved and sterilized for their safe human consumption and extended durability. The essence of pasteurization is short-term is an increase in temperature of the processed liquid to 72 °C with classic pasteurisation or 132 °C with UHT, high temperature destroys the pathogenic microorganisms, but it also destroys sensitive advantageous bio-active components which are also sensitive to heat like immune substances, proteins, enzymes, vitamins, proteins) which are plentiful in colostrum [12].

Separate to Remove Cream

Raw colostrum contains fat and casein, which are eliminated from the colostrum. In this step use of 10, 5 and 3 micron filter are used. The filtration removes large components, such as aggregates of lipids, proteins, and other materials, which may interfere with absorption or may result in sterile abscesses, without affecting nutritious components of it.

Reduction of Bioburden

Cold sterilisation or Sterilisation by filtration is a process where cold fluids pass through special micro-filters, which grab dangerous microorganisms whilst its natural bio-active and biological components remain untouched.

Sterilization is accomplished by 1.0 to 4.5 Mrad gamma-irradiation.

Ultrafiltration to Concentrate

A crossflow system designed for quick concentration and diafiltration is use for Whey Ultrafiltration. The ultrafiltration membrane was composed of hydrophilic polyethersulfone, with a molecular mass cut off of 10 000 Daltons and a membrane area of 24 cm2. Pressure transducers were used to determine the pressure at the inlet and outlet. The feed temperature was controlled by a heat exchanger. The crossflow velocity was changed using a peristaltic pump. The retentate containing whey protein concentrate was discarded; the permeate was lyophilized until a white powder containing no residual water was obtained [13].

Spray Drying

Spray drying produce stable, a low moisture powder (whey protein concentrate, WPC) having a protein content as high as 80% w/w and finding widespread use as a food ingredient. This procedure turns the liquid colostrum into a fine powder that is stable for prolonged periods.

Quality Control

IgG concentration is generally used as the measurement ofcolostrum quality. High quality colostrum is defined as having an IgG concentration of greater than 50mg/ml. The quality of colostrum can be assessed using either direct or indirect methods: • Direct methods measure the level of antibodies Radial Immunodiffusion (RID) assay: Which measure the actual levels of antibodies in the colostrum.
The scale in a Brix refractometer is designed to measure the amount of sucrose in a solution, but Brix values can be related to IgG in colostrum. [14,15]

Indirect methods estimate the level of antibodies

Refractometer

A Refractometer is a device that uses light to determine the density of a liquid. Refractometer calibrated in the Brix scale, can be used to assess the quality of colostrum with good accuracy.

Colostrometers

The colostrometer is an inexpensive tool which is designed to provide an estimate of the quality of colostrum on farm. The device is floated in the colostrum and a colour coded chart on the side is used to identify the estimated level of IgG contained in the sample

Visual assessment

Judging the quality of colostrum by its colour and consistency (visual assessment). Visual testing is based on the notion that thicker, darker coloured colostrum will be more concentrated and therefore have higher IgG levels. However a visual assessment is better than none, and becomes more valuable when used in combination with another indirect test such as colostrometer or refractometer.

Colostrum as reviewed can be of use in variety of setting [16]

Athletic Performance: It protects athletes from infections caused by the physical and emotional stress of competition. Using colostrum as a dietary supplement also increases the efficiency of the digestive tract for athletes in training. The intestines are able to make more nutrients available to the muscle cells and the body's vital organs. Useful in Prevention of non-steroidal anti-inflammatory drugs (NS AIDS) induced gut injury, Local Immunity, Systemic Immunity, Antigen Handling, Prevention of Diarrhea, Joint Disorders like Rheumatoid Arthritis, Useful in the Auto-Immune and Allergic Disorders: to reduce or eliminate the pain, swelling, and inflammation associated with allergies and autoimmune diseases (multiple sclerosis, rheumatoid arthritis, lupus, myasthenia gravis). These effects are related to PRP's ability to inhibit the overproduction of lymphocytes (white blood cells) and T-cells. Useful in Respiratory Tract Infections, Sinusitis and Pneumonia and Anti-Oxidant and Fibroblast Activation Anti-Aging properties.

Anticancer Activity Of Immunize Tablets

Immunize tablets contain colostrum, Colostrum contains high concentrations of immunoglobulins, cytokines, growth factors, lactoferrin and other proteins, which play an important role for passive immunity of the offspring and act as immunomodulators.Intake of colostrum, especially bovine colostrum products, are claimed to modulate the human immune system, alleviate inflammatory diseases and their symptoms and act against cancer cells in humans. Researchers have found that the lactoferrin in colostrum has some anti-cancer activity. In addition, the combination of immune factors and growth factors in colostrum appears to inhibit the growth of cancers. No adverse effects have been reported in cancer patients. People who are allergic to dairy products should not take colostrum preparations.Colostrum seems to be generally safe in cancer patients.

Composition of Immunize tablets

Colostrum contains high concentrations of immunoglobulins (IgG, IgM, IgA), cytokines (interleukin 1beta, interleukin-6, tumour necrosis factor alpha, interferon gamma), growth factors (insuline-like growth factors I and II, transforming growth factor-beta, epidermal growth factor), lactoperoxidase, and lactoferrin.

Dosage

The average recommended daily dosage is 1 to 2 tablets per day.

Claims of efficacy

The different constituents of colostrum have been ascribed antimicrobial, anti-inflammatory and hypertension controlling effects in humans through an active and passive immune response. Regarding cancer, colostrum has been claimed to act against cancer cells and alleviate gastrointestinal symptoms.

Alleged indication

Colostrum is used for a wide range of indications, especially colitis, diarrhoea and other gastrointestinal disorders,infections, recovery after surgery, prevention of gastrointestinal side effects of drugs and treatment of different rheumatic pain syndromes. Cancer patients use it to prevent therapy-associated adverse effects (especially those associated with an inflammation of the gastrointestinal tract), to alleviate diarrhoea, “boost” their immune system or to achieve an anti-proliferative effect.

Mechanism of action of Immunize tablets

Oral intake of colostrum has been reported to modulate the human immune system and lead to higher concentrations of cytotoxic/suppressor T cells and IgG . In vitro studies suggest bovine colostrum may exhibit anti-inflammatory propertiesby inhibiting the NFkappaB activation and cyclooxygenase-2 expression.

Clinical Study Reports

An anti-proliferative effect of oral bovine lactoferrin has been found in an animal study in ratsand in in-vitro studies in human cancer cells.

The earliest identifiable study, a case series, was conducted by Lewison and colleagues (1960). [18] Seventeen women with advanced breast cancer received 1.1 litre of bovine colostrum per day for periods between 5 and 595 days. All patients were in a palliative or preterminal treatment situation without further options of conventional cancer therapy. Eleven of them received colostrum from cows that were injected with a homogenate of human breast cancer tissue in the udder. At the end of the observation period, two patients were alive and 15 had died. In no patient a remission of the cancer disease was seen. Ten patients reported periods of subjective improvement. Study authors evaluated their attempt of “passive immunization therapy” with bovine colostrum.

Inoue and colleagues (1998) reported on a case series with 9 patients suffering from severe graft-versus-host-disease (GvHD) after bone marrow transplantation.[17] Patients received 20 ml of human colostrum for 5 consecutive days. Clinical stage of GvHD improved in 6 patients.

Another case series investigated the use of a bovine immunoglobulin product (IgG) that was concentrated from the colostrum of cows immunized with killed Candida albicans germs.[19] Out of 59 bone marrow transplant recipients, 19 received orally 10 g of the colostrum concentrate as dissolved powder containing 4.2 g of IgG. The product was given from day 4 before bone marrow transplantation to day 28 after transplantation. Ten of the IgG-treated patients showed a high level of Candida colonization as evaluated in mouth wash prior to colostrum administration. In 7 of these 10 patients, a reduction in colonization burden was seen during colostrum treatment.

Adverse events

No adverse effects were reported in the above mentioned case series. The use of colostrum also seemed safe in studies with healthy volunteers

Contra-indications

Patients with allergies to dairy products should not use colostrum.

Interactions

No interactions with drugs have been reported.

CONCLUSION

Colostrum contains high concentrations of immunoglobulins, cytokines, growth factors, lactoferrin and other proteins, which play an important role for passive immunity and act as immunomodulators.Intake of colostrum, especially bovine colostrum modulates the human immune system, alleviate inflammatory diseases and their symptoms and act against cancer cells in humanscytokines contained in colostrum have been a major area of research in seeking a cure for cancer. Researchers have found that the lactoferrin in colostrum has anti-cancer activity. In addition, the combination of immune factors and growth factors in colostrum appears to inhibit the growth of cancers.

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