

Commercialization Of Colostrum Milk for The Benefit of Human Health in Gunupur City, Odisha

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ABSTRACT

Colostrum milk is the first milk produce after the parturition or the baby birth. It is a necessary food for a new born baby for increase its immune system to protect against pathogen and boost the physiological performance, growth and mental development. Colostrum milk contains polysaturated fatty acids, growth factor, hormones, oligosaccharide, lactoferrin, a greater number of leukocytes (WBC cells) and high concentration of immunoglobulins. Colostrum milk provides passive immunity to the new born. People in the Gunupur block are establishing dairy farms and producing milk on a large scale. So, if we establish a factory of Colostrum milk then, we can easily collect the colostrum milk from the dairymen and supply the products by suitable transport medium to other states of India. The colostrum milk is highly proteinaceous product which is highly beneficial to the patients and build a new born babies' immune system. My goal is to use government funding to commercialize colostrum milk in the Gunupur block and distribute it to nearby government hospitals and underprivileged citizens.

Keywords: Colostrum milk, Colostrum Powder, Health Benefits, Industrialization, Commercialization.

Introduction

Milk is the wholesome food among all animal products. It contains a proper proportions the various essential food ingredients required by human body in an easy digestible form. The productivity of milk varies in different countries, as some countries are surplus in production, some are deficit in production and in some countries, availability matches their requirement. In India milk produced by a vast number of small, medium, and large- sized farms. There is exponential growth in the number of the commercial dairy farms in the urban and semi urban areas of the metros and big cities [1].

The demand for milk is constantly increasing in cities as well as small towns and rural areas. The factors influencing this increased demand are; i) rapid increase in population, ii) spread of education, iii) growing nutritional awareness and improved purchasing power of consumers.

The annual milk production in 2015-16 was 155.5 million tones and per capita availability of milk was 337grams per day. But Foreign Agricultural Services (FAS), New Delhi forecasts 2023 fluid milk production in India will increase and assuming to 207 million tones in normal southwest monsoon season [2].

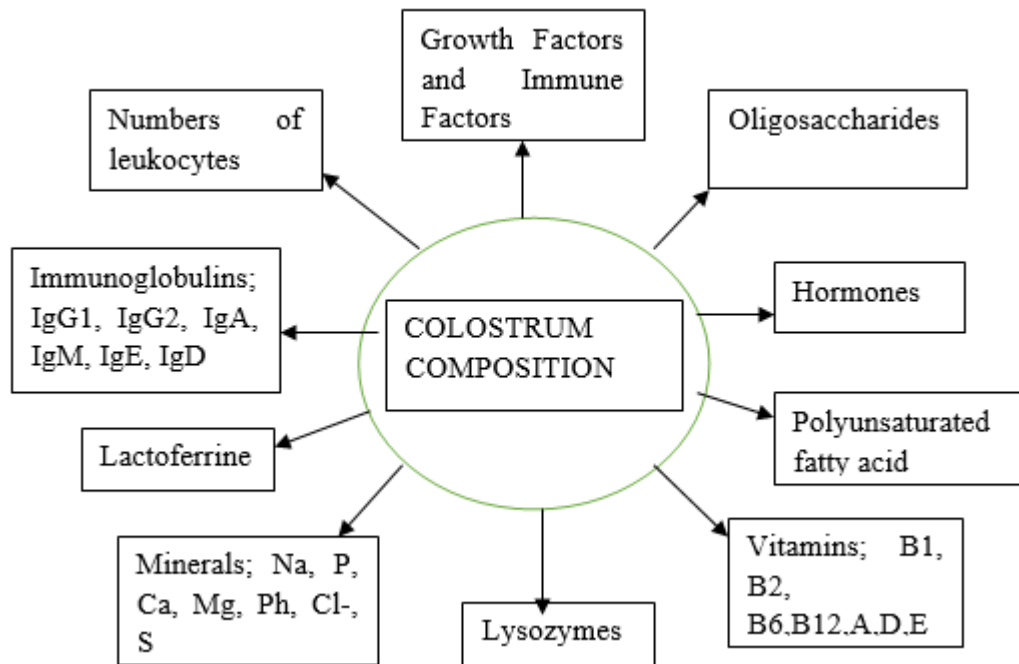
Dairying provides a source of daily income with a relatively low level of risk. Most of the dairy farmers in India raise animals at a small scale in traditional ways. Most of the farmers are not aware of the modern methods of dairy farming. As a result, the farmers lose their investment instead of making profit. To ensure maximum production and profits from dairy farming, it is essential that these farmers adopt proper business plans and good dairy management practices.

India is predominantly an agrarian society, where animal husbandry forms the backbone of national economy. Agriculture is the primary source of income for nearly 75% Indians of the Indian population. India has a vast resource of livestock, particularly dairy animals, which play a vital role in the socio-economic conditions of rural masses. Dairying provides millions of small and marginal farmers and landless labour, means for their subsistence.

Before to the normal white milk, the first secretion of the mammary gland following parturition is known as Colostrum which is designed by the nature to give young a good start in life.

Colostrum milk is the first milk produce after the baby birth during the 24-48 hours only. Colostrum is secreted in more concentrated form during the first 8 hours as compare to normal milk [3]. It is a necessary food for a new born baby for increase their immune system to protect against pathogen and boost the physiological performance, growth and mental development. As we take Colostrum milk from outside, it is not producing by our own body that's why it provides the passive immunity to the animal body and protect against infection, especially during the first week of life. It greatly differs from milk produced later during lactation. The anti-microbial activity of colostrum can be direct on pathogen agents or indirect by stimulating the growth of a healthy intestinal microbiota rich in Bifidobacteria and Lactobacilli [4]. Colostrum provides signals to the immune system by inducing tolerance to food and non-invasive antigens, thus avoiding the onset of an abnormal immune response while promoting its maturation and an adequate immune response against pathogens at the same time [5]. Several studies have extensively analyzed the composition of bovine, goat and human colostrum highlighting the presence of at least ninety different biologically active substances essential for specific functions. Newborns have immature gastrointestinal (GI) and immune systems. Postnatal intake of colostrum rich immunoglobulins and lactoferrin, growth, and antimicrobial factors provides all the important nutrients required for building their life-long immunity, promote tissue growth, and maturation of the digestive tract in neonatal animals and humans. Colostrum also has a laxative effective and therefore assists in delivering the initial stools or meconium in new born. It also helps in excretion of bilirubin and reduction of neonatal jaundice [6].

Figure 1. shows the compositions of colostrum milk are; i) polyunsaturated fatty acids, ii) growth factors, iii) hormones, iv) oligosaccharides, v) lactoferrin, vi) lysozymes, vii) numbers of leukocytes, and viii) high concentration of immunoglobulins.



(Figure 1: Overview of different components of Colostrum.)

Bovine colostrum was consumed by humans for thousands of years for its different medicinal uses like antibacterial properties. Nowadays, there are more than 120 clinical trials taking place to investigate about the medicinal properties of colostrum milk. Ayurveda, the ancient system of medical practice in India, also used the colostrum milk for its different treatment like; 1) Bovine colostrum therapy for human gastrointestinal health, 2) uses in skin care routine, 3) value in bone density, 4) use in Type-2 diabetic patient, 5) in veterinary practices, 6) as food supplement (Kharwas, Ginna), 7) colostrum powder in medicine industry, 8) as stamina booster in athletes.

Historically, colostrum and milk are well known for promoting health and well-being in children and adults. The immunoglobulins and lactoferrin rich colostrum and milk of different species (e.g., cow, buffalo and goat) are readily available in large quantities making these secretions important potential sources of immune products beneficial for humans [7]. In recent decades, BC have been used for the prevention and treatment of a variety of human and animal diseases, especially but not only of the gastrointestinal system [8]. Research has been shown that BC is more potent than the human colostrum. The colostrum obtained from the cow and buffalo is 100 times to 1000 times more potent than that of the human colostrum. Therefore, BC can be consumed as a dietary supplement for its health benefits in humans [9].

Colostrum milk Industry in India:

India has been the leading producer and consumer of dairy products worldwide since 1998 with a sustained growth in the availability of milk and milk products. Dairy activities form an essential part of the rural Indian economy, serving as an important source of employment and income. India also has the largest bovine population in the world. However, the milk production per animal is significantly low as compared to other major producers. Basically, all of the dairy produce in India is consumed domestically, with the majority of it being sold as fluid milk. Along with offering profitable business

opportunities, the dairy industry in India serves as a tool of socio-economic development. Keeping this in view, the Government of India has introduced various schemes and initiative aimed at the development of the dairy sector in the country.

The colostrum-based products are colostrum gummies, colostrum powder, Nutra up mass gainer with colostrum, bovine colostrum powder shelf life:6 months, colostrum powder shelf life:24 months, colostrum capsule, cow colostrum tablet, immune strong B-colostrum powder, colchicine powder api shelf life:18months...etc. All these colostrum products are manufacturing in different pharmaceutical companies/ medicinal industries like- Lexicare Pharma Pvt. Ltd. Ankleswar, HerboNutra Extract Pvt. Ltd. Noida, Nutralike Health Care, Mitushi Biopharma Ahmedabad, Nutricore Biosciences Pvt. Ltd. Surat, Alax Bioresearch Pvt. Ltd. Ahmedabad, Rajvi Enterprise Ahmedabad, Facmed Pharmaceuticals Pvt. Ltd. New Delhi, Biostrum Nutritech Pvt. Ltd. Mehsana, Raxuter Chemicals Surat, Cure Nutraceutical Pvt. Ltd. Gujarat, etc.

Cure Nutraceutical Pvt. Ltd. – Cure nutraceutical is a best quality colostrum powder manufacturer and supplier. Seeing an opportunity because of increasing demand from the urban areas, a group of entrepreneurs decided to enter into the processed high quality colostrum powder. It supplies 4 products in the market that are Colostrum capsule, Colostrum powder, Colostrum sachets, Cow colostrum powder. Name of the trademark is COLOSRTOVITA.

Biostrum Nutritech Pvt. Ltd. - Biostrum Nutritech is another prestigious company of India which manufacture 100% pure and Natural Bovine colostrum Powder, Colostrum Capsule and Colostrum Tablets since 2005 with capacity of 40 MT per month. The process begins with the dairy farmer collecting the best quality surplus colostrum from healthy dairy cows. Then the batch- pasteurization technique eliminates pathogenic bacteria from colostrum without inhibiting the nutritional value, retaining the most authentic flavor, and not destroying any proteins and immunoglobulins. Then by drying process they make that into super fine powder by using indirect heat to preserve the properties of the raw milk by 98%. They did the qualitative test that is QC/QA test for maintain the quality

Aim and Objectives:

The aim of this review is to discuss the health benefits of colostrum and commercialization of it in Gunupur city.

- Justification for the importance of Colostrum milk in human health.
- Commercialization of Bovine Colostrum milk in Gunupur city.

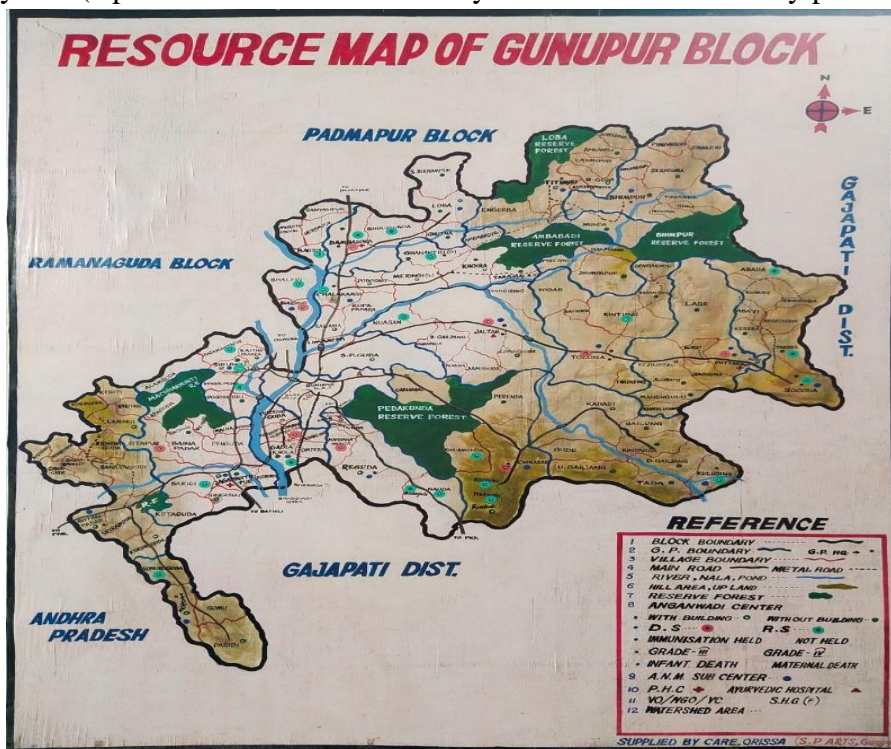
Materials and Method:

Study Area: As I am belonging from India, State Odisha so I choose the area i.e., Gunupur where I started my research and use as my study area. Gunupur is coming under Rayagada district of Odisha, is a crowd city where I did my research on colostrum milk. Gunupur is located at 19.08°N 83.82°E. It has an average elevation of 83 meters (272 ft). It is located in the lap of the Eastern Ghat and on the banks of river Bansadhara.

As of 2011 India census, Gunupur has a population of 62,870. Males constitute 50% of the population and females 50%. Gunupur has an average literacy rate of 80.4%, higher than the national average of 74.4%: male literacy is 85.56% and female literacy is 70.40%. In Gunupur, 11% of the population is under 6 years of age.

Gunupur is connected to other parts of Odisha by state highway SH17 (Gunupur-Digapahandi-Berhampur) and SH04 (Paralakhemundi-Gunupur-Rayagada-Koraput). It is also well connected with major cities of Andhra Pradesh. Odisha state road Transport Corporation, Andhra Pradesh Road transport corporation and Private buses run frequently between Gunupur to other parts of Odisha and Andhra Pradesh. Gunupur is connected by the 90 km long Naupada-Gunupur branch railway line to Naupadarailway junction on the Khurda Road-Visakhapatnam section of the Howrah-Chennai route. The nearest airport is the Visakhapatnam Airport at a distance of 200 km towards the south. The other nearest airport is the Bhubaneswar Airport, which is about 360 km. There are about 177 villages in Gunupur tehsil which has the nearest town is Gunupur, Ramnaguda, Padmapur, Gudari and some have Raygada.

From the below figure, we can see the numbers of villages in Gunupur city. The peoples of these area specifically depend upon agriculture. They use their domestics in fields. Animal husbandry, the practice of rearing animals specifically for farming purposes, has existed or thousands of years. Except some farmers mainly the people doing dairy farming. The villages which are far from Gunupur city, the farmers of that villages also selling milk in chief price. I visited some of the villages near to Gunupur city, by following the map and make a survey report of domesticated cow, buffalo, goat, lamb...etc. from several dairymen (a person who work in the dairy farm or deals with dairy products).

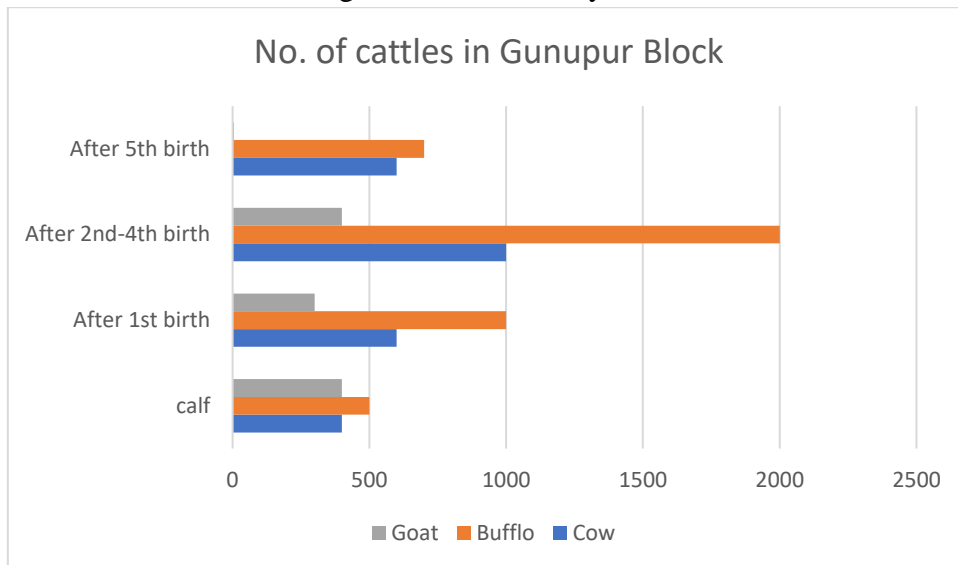


(Figure 2: Map of Gunupur block)

Collection and Survey method:

I made the decision to prepare a report on the domesticated cattle in Gunupur. I prepared a data sheet for my survey. After visiting about all the villages, I got to know that maximum peoples are depending upon the agriculture dairy farming (bovine milking) as they are belonging to Gouda family background. By selling the milk they feed their family. Those who are doing dairy farming in the agricultural field, their cattles being vaccinated by veterinary doctors at appropriate time. Other dairymen have no idea about

the medicinal property of colostrum milk that’s why they throw that first milk of bovine. They think that colostrum milk is harmful to human being as well as the baby of that cow/buffalo.



(Figure 3: Bar diagram shows the no. of cattle as per the age limit in Gunupur city)

From the above bar diagram, we can calculate the number of Cow, Buffalo, and Goat of Gunupur city. Here the grey color bar indicates Goat, Orange color bar indicate Buffalo and Blue color bar indicates Cow. From the diagram, we can estimate the numbers of buffalo is more than others.



(Figure 4: Herd of buffalo)



(Figure 5: Herd of cow)

Survey result:

From the survey report I got to know that peoples of Gunupur city and its nearby villages are highly depended on Dairy farm. They are used to sell the milk and with that income they are maintaining their family. So, if the number of cattle is more, than the amount of colostrum milk also more. Some people of these areas also know about the medicinal property of colostrum milk and some are not. Therefore, if we want to establish a Colostrum milk factory in Gunupur City, it might be achievable. Actually, we cannot take the entire colostrum milk of any cow or buffalo as a raw because it may cause some disease to the new born baby and after boiling the effectiveness of colostrum milk destroyed so we cannot get the proper nutrients from it. Peoples are not aware of that. The Colostrum milk needs actual processing for making the medicine or powder form of it which can only possible by the Industrial Research and Development block. From the experimental result we got to know that the buffalo colostrum is carrying high concentration of protein than cow and in Gunupur city peoples are mainly domesticating the

buffalo, so we can collect the colostrum milk of both cow and buffalo for our process. Here we can easily get the colostrum milk from the dairymen.

Conclusion:

Colostrum milk is providing the passive immunity to the neonates. Colostrum has high affinity for the body cell repair, regeneration, some biologically active molecules for renewal and repair of various special and general cell of muscle, cartilage and all. Colostrum has trypsin inhibitor that prevents its intraluminal activation. As compare to normal milk the colostrum milk contains more proteins, growth factors, immunoglobulins. The important thing is that it has less lactose molecule, hence it may use by the type 2 diabetic patients. In Gunupur city, we can get high quantity of Colostrum milk if we give some more amount to the dairymen for the colostrum milk as compare to the amount of normal milk. Any colostrum industry is no longer develop in nearby areas so it will get more benefit to the dairymen. By developing a factory the unemployed people of this city get job in the factory. As Gunupur city is the main block of Rayagada district it is connected with good transport system (by bus and by train) so the raw milk and the processed colostrum milk powder and other medicines can supply through it. This city is very close to another state of India i.e., Andhra Pradesh. So, the business will get its start up by dealing with Andhra and other states.

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