SOURDOUGH MICROBIOTA IN COMBINATION WITH BIOENGINEERING TOOLS TOWARDS PREPARATION OF FUNCTIONAL MOLECULES FROM BOVINE COLOSTRUM FOR AGRI-FOOD, NUTRACEUTICAL, COSMETIC AND PHARMACEUTICAL INDUSTRY

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Bovine colostrum, also known as "first milk" or "first food", is produced by healthy mammary glands until the first 72 hours *post-partum*, after which it acquires the typical physicochemical, microbiological, nutritional and rheological characteristics of milk. Colostrum is composed of unique bioactive compounds, which are divided into two main classes: immunological (immunoglobulins, antibodies, proline-rich polypeptides, glycomacropeptides, glycoproteins, lactalbumins, lactoferrin, lactoperoxidase, cytokines, lysozymes) and growth factors [epidermal (EgF), insulin like (IgF-1 and IgF-2), transforming (TgF-A and TgF-B) and plaquette-derived growth factors, vitamins and minerals]. The use of colostrum to treat illnesses and to contribute to the well-being dates from thousands of years ago. The prophylactic and therapeutical use of immune milk presented satisfactory success in the prevention and treatment of bacterial infections produced by *Escherichia coli* strains, in gastroenteritis treatments in children originated by rotavirus, in the treatment of cryptoccidiosis (or cryptococcal disease, a disease caused by one of two species of fungi belonging to the genus of *Cryptococcus*) and diarrhoea in patients with acquired immune deficiency syndrome (AIDS) and other immunological illnesses, and in the prevention of dental caries, among many other examples. In all these cases, colostrum was collected from cows previously hyper-immunised with specific pathogens. Thanks to the biotechnological advances obtained in the last decades, it has been demonstrated that the immunological and growth factors present in colostrum composition are transferable along all the food chain between mammal species and are not species-specific. Hence, a major opportunity to expand the renewed market niche of colostrum has emerged rapidly and its reintroduction in the market depends in biotechnological breakthroughs. In this context, this presentation is focused in research studies that have been undertaken aiming at the implementation of a novel biological technology for the production of functional molecules from bovine colostrum through bioengineering tools based on the ultrasonication in combination with sourdough LAB fermentation and dehydration, resulting in a safe material with constant quality and a very high-added value for the development of innovative products in the pharmaceutical, cosmetic, nutraceutical and agri-food industry. This new technological approach to process and use the bovine colostrum represents a breakthrough that worth exploring.

Keywords: bovine colostrum, lactic acids bacteria (LAB), bioactive compounds, immunological compounds, growth factors, prophylactic, therapeutic.