

By-products valorization on the DAIRY industry

INTRODUCTION

The dairy industry is one of the largest producers of by-products within the food industry. In front of this grand amount of waste, the European Union established specific regulations to reduce it. Dairy industry produces organic by-products that are inappropriate to throw it into the net or surface water because that would increase the Biochemical Demand of Oxygen (BDO) and also contamination. One of the best solutions is to valorize those by-products. Valorization is a process that gives a new value to a product that was considered a waste. To produce this valorization it is necessary to use machinery and specific processes. In the dairy industry, some products can be valued with a big interest for many economic and industrial sectors because the great nutritional and functional potential.

OBJECTIVES

The objective was to identify the functional potential, the nutritional value and the obtaining process of those by-products generated on the dairy industry, also considering the new trends in the sector.

TYPES OF BY-PRODUCTS

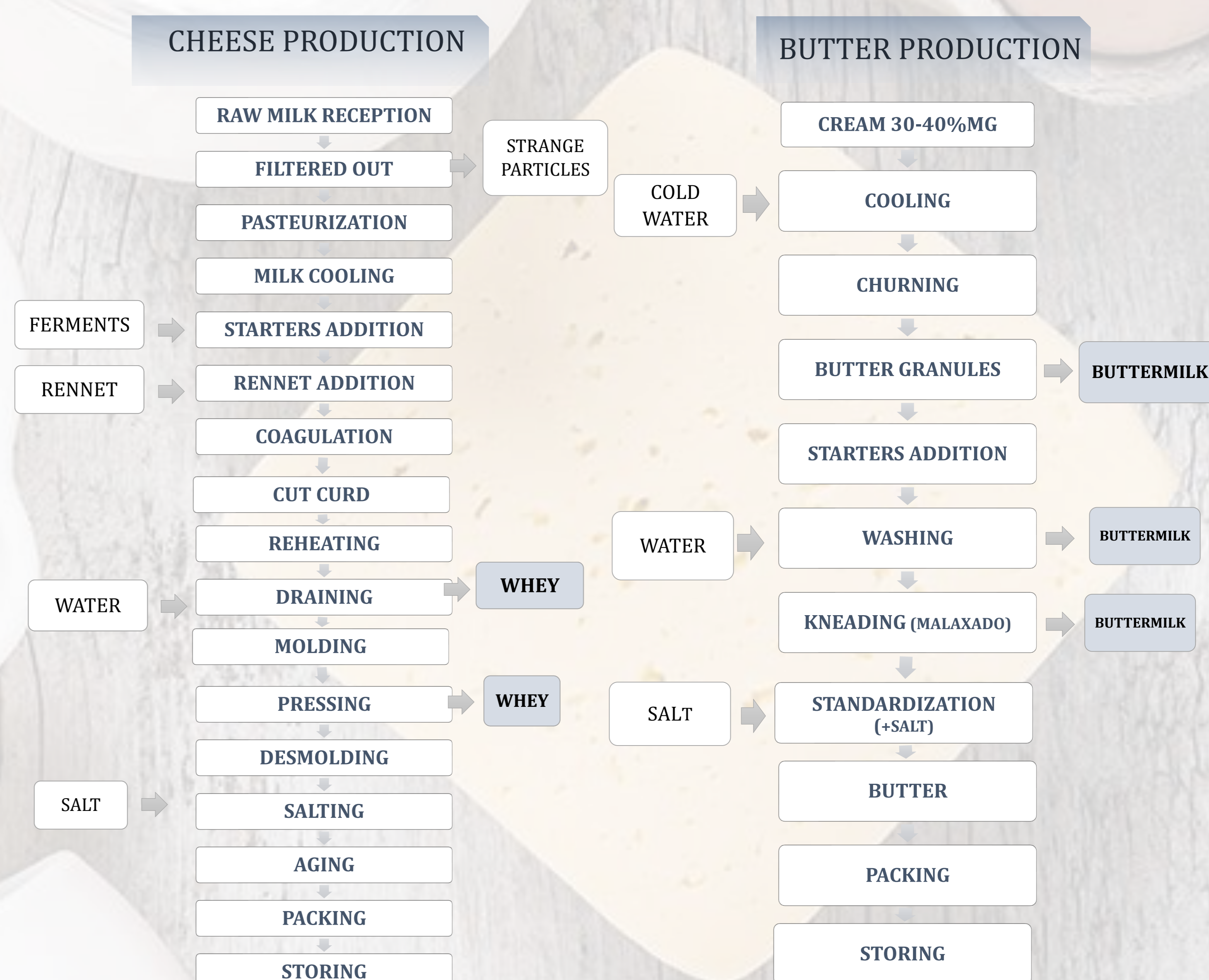
WHEY



BUTTERMILK



OBTAINING INDUSTRIAL PROCESS



VALORIZATION

Using whey and buttermilk as an ingredient allows the transfer of nutritional and functional properties to new food products.

To realize this valorization is required an adaptation of the product through purification and pasteurization.

MULTIPLE APPLICATIONS

Bakery products, dietetic products, meat products, babyfoods, cheeses, dairy products, yeast substrate, drinks, alcoholic drinks, confectionery, milk chocolate, polyhydroxybutyrate and others

FUNCTIONALS PROPERTIES

LACTOSE	
FUNCTION	BENEFITS
Colour contribution	Contributes to the color development because of the Maillard reactions.
Fermentation substrate	Contributes to fermentation so more CO2 is generated and more volume is obtained
Thickener	Increases the total solids content
Flavour enhancer	Enhance the flavor of products
Humectant property	Delays the loss of moisture, minimizes syneresis.
Low sweetener power	Increases other functional properties without increasing sweetness

WHEY & BUTTERMILK	
FUNCTION	BENEFITS
Emulsification / foaming	Increase binding between insoluble phase with soluble phase - air phase. Prevents fat globules from forming lumps.
Water holding capacity	Minimizes syneresis and delays the loss of moisture. It increases with the denaturation of proteins
Adhesion-cohesion	Increase the stability of the product
Gelification	Formation of gel during heat treatment and the improvement of viscosity (because denaturation)
Solubility	Prevents sedimentation in beverages, soups, and sauces
Flavour enhancer	Enhance the flavor of products
Nutritional profile	Increases nutritional value, provides quality proteins, vitamins and minerals

CONCLUSIONS

The use of whey and buttermilk in food production has increased significantly in recent years. The use of these by-products reduces economic costs and environmental contamination. The great interest of these by-products is because the special nutritional and functional properties that they present, highlighting the protein content in the case of whey and sphingolipids in the case of buttermilk. The valorization can be done by obtaining components by the fractionation of whey or by the use of those by-product as an ingredient. To realize the valorization process, it is necessary to produce a purification and a microbiological inactivation, apart from other specific processes. Thanks to the valorization the functional and nutritional properties of those by-products can be included on the food production improving their characteristics.