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Serpa is a Protected Designation of Origin cheese, as provided for in Regulation (EEC) 2081/92 of the European Commission, as such, it must be manufactured in the defined geographic area. Serpa traditional manufacturing process maintained through the ages in region, requires the use of raw ewe`s milk and vegetable coagulant based on dried flowers of *Cynara cardunculus* L., without any commercial starter, which emphasizes the role of the selected autochthonous microbiota. Its proliferation and qualitative composition will play a key role in creating the specific sensorial profile, general quality and safety. This microflora comes mainly from raw milk, but also from the whole surrounding environment. Under these conditions, the autochthonous microbiota may reflect its authenticity. The dependence of raw milk determines a great heterogeneity of the final characteristics, difficult to control by the cheesemaker in case of milk of inferior microbiological quality. In addition, from the point of view of food safety, the consumption of raw milk cheeses products causes some suspicions making the acceptance by some markets difficult. The aim of this project is to develop a clear understanding on the microbiome of the Serpa cheese and relate this factor with cheese quality. The specific objectives of this proposal are summarized as follows: (i) To characterize the Serpa cheese microbiome using culture dependent techniques and high-throughput DNA sequencing (HTS); (ii) To correlate the cheese microbial profile with the chemical, biochemical, rheological and sensorial attributes, in order to establish dominant autochthonous strains in high quality cheeses; (iii) To select appropriate strains based on food safety, probiotic nature, technological aptitude, and behaviour in laboratory cheese models; (iv) To develop starter cultures, single or multiple strains, and evaluate their effectiveness at the laboratory and pilot scales; (v) To establish novel technologies for the preservation and commercial presentation of innovative starter cultures.