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Role of native lactic acid bacteria in the manufacture and ripening of model cheeses from goat's milk

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Portuguese traditional cheeses are regularly manufactured from raw milks. Hence, the adventitious microflora present – mostly lactic acid bacteria undergo different evolution patterns throughout ripening. The actual dynamics of such populations are partially responsible for development of typical flavour characteristics, inherent to each kind of cheese. In order to shed further light into these phenomena, sterile cheeses were produced from sterilized raw goat's milk, using animal or plant rennet, and following the traditional procedure (which encompasses milk salting, rennet addition, incubation, cutting and whey removal). Prior to addition of rennet, milk was further inoculated with either a single or a mixed culture of *Lactococcus lactis*, *Lactobacillus brevis* or *Lactobacillus plantarum* (such strains had been previously isolated from traditional Portuguese cheeses), using a 1% (v/v) inoculum at a 1:1 ratio. Cheeses were kept up to 60 d at 7 °C, in attempts to simulate typical cheese ripening conditions. Microbial viability was assessed in the various cheeses throughout ripening; pH and moisture content were also monitored. Distinct bacterial profiles were observed; e.g. *L. lactis* was responsible for a rapid acidification, yet their viable numbers decreased later during ripening.

Improvement of whey cheese matrices via incorporation of *Lactobacillus acidophilus* — proteolytic and glycolytic activities and their impact upon sensory analysis

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Requeijão is a highly nutritious soft Portuguese whey cheese, yet with such organoleptic limitations as poor flavour and grainy texture. Furthermore, it offers excellent conditions for survival and growth of lactic acid bacteria, owing to its high water activity, pH above 5.0 and low salt content. The objective of this research effort was thus to study the contribution of *Lactobacillus acidophilus* LAC 1 to the improvement of the organoleptic quality of Requeijão, via its proteolytic and glycolytic activities. Experimental whey cheese matrices were produced, and subsequently inoculated with *L. acidophilus*; these matrices, as well as a control curd, were stored at 7 °C, and samples were taken at 0, 2, 7, 14 and 21 d. Cell viability, pH, and fat, protein and moisture contents were assessed. The contents of water-soluble nitrogen (WSN), nitrogen soluble in 12% (w/v) trichloroacetic acid (TCA) and nitrogen soluble in 5% (w/v) phosphotungstic acid (PTA), as well as of lactose and organic acids were also determined. Sensory analysis was finally performed, using a five-point scale for the various attributes. *L. acidophilus* viable cells number remained constant up to 21 d, while pH decreased by ca. 0.6; this was consistent with an increase in lactic acid content up to 28 mg/g of whey cheese. Values of TCA and PTA in *L. acidophilus* matrices indicated relevant proteolytic breakdown of whey proteins. These matrices received the highest overall preference scores in sensory evaluation.