



Physicochemical and microbiological effects of different sonication times on goat's milk yogurt

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Track

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Keywords

ultrasound technology, fermented caprine milk, food rheology Goat's milk yogurt has lower rheological and textural properties than cow's milk yogurts due its relevant physicochemical properties, such as the composition and size of casein micelles' and fat globules structure. Technological strategies have been used to improve these characteristics, although sonication's effects have not yet been elucidated on goat's milk yogurt. Thus, the objective was to evaluate the physicochemical (proximate composition; pH; carbohydrates, organic acids and

biogenic amines quantification; texture and rheology) and microbiological effects of different sonication times in goat's milk yogurts during 28 days of storage at 4°C. Four treatments of probiotic goats' milk yogurt (*Lactobacillus acidophilus* LA-5) were made: non-sonicated (NSU), and sonicated for three (US3), six (US6), and nine (US9) minutes (20 kHz, 300 W, 67% amplitude, 18 mm diameter). Goats' milk yogurts were analyzed on triplicate on days 0, 14 and 28 of storage. Goats' milk yogurt samples did not alter its composition and pH. Meanwhile, as the sonication time increased, the bacterial counts decreased on day 0 of storage, as also was observed in biogenic amines (putrescine, spermine, spermidine and tyramine), excepting cadaverine. Lactose and lactic acid had superior concentrations in US9 when compared to US3. These results evidenced negative effects of ultrasound treatment not also in lactic acid bacteria viability, but also in deteriorant microorganisms. In general, US6 treatment showed greater firmness, consistency, cohesiveness and viscosity than another samples. The Power Law model was elected to describe the rheology of the yogurts analyzed, where non-Newtonian pseudoplastic behavior was described. Even though the ultrasound cavitation effect disrupts yogurt's bacteria and probiotic cells, it enhances the yogurt's microstructure strength by reducing and redistributing fat and protein particles, improving goat's milk yogurt rheology and texture. Ultrasound processing for six minutes can be indicated to enhance these goat's milk textural and rheological properties, despite bacterial losses.