EFFECT OF HIGH HYDROSTATIC PRESSURE ON α-LACTALBUMIN NANOTUBES
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It has been shown that the partial hydrolysis of the protein α-lactalbumin (α-La) by a bovine protease of *Staphylococcus aureus* produces the self-assembly of the peptides in nanostructures highly ordered and well-defined, being called nanotubes. The present study was to evaluate the high hydrostatic pressure (HHP) effect on the structure of nanotubes made from the hydrolysis of α-lactalbumin using endoproteinase from *S. aureus* (known as enzyme Glu-C or V8), characterized the changes that occur when applying these bionanotubos at different times and hydrostatic pressures through micrographic analysis with TEM and spectrophotometric analysis by FT-IR. To do this, the protein was dissolved in phosphate buffer (pH 7.5) at a concentration 3% (w/w), adding calcium in a molar ratio R=6, then added protease in a ratio of 4% (w/w) with the protein, the resulting solution is filtered and incubated at 50 °C for 20 hours. The nanotubes were confirmed by TEM. The nanotube solution is subsequently diluted (1:10), subjected to HHP (50 to 400 MPa) for 30 to 60 seconds. The TEM results indicate the formation of nanotubular structures with outer diameter 20 nm and 8 nm cavities. Nanotubes at pressure below 100 MPa showed no significant changes, while the samples subjected to pressures above 100 MPa presented structural alterations. All treatments showed FT-IR spectra amide I and II bands typical of α-lactalbumin. We conclude that nanotubes of α-La with HHP treatments below 100 MPa showed no structural alterations.