

## From Processing to Product: Utilizing Novel Processing Technology to Produce Plant-Based Protein Yogurt Analogue

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The demand for dairy-free yogurt alternatives based on alternative proteins has been increasing. Yet, many plant-based proteins have limited techno-functional properties, such as poor aqueous solubility, limiting their use and diversification of yogurt alternatives. High-pressure homogenization (HPH) has been suggested as a tool for attenuating some of these technological limitations. This work studied the combination of an alternative plant protein source, potato protein isolate (PPI), as a protein model, with the utilization of HPH to produce a fermented yogurt alternative without adding stabilizers. The utilization of HPH as a pre-processing step (200 MPa and  $T_{in}=15^{\circ}\text{C}$ ) increased isolate solubility (from  $92.7 \pm 1.1\%$  to  $97.5 \pm 0.8\%$ ) and reduced downstream PPI sedimentation. Before inoculation with lactic acid bacteria, PPI emulsion was subjected to homogenization at pressures ranging from 30-200 MPa. Such a process stabilized the emulsion against separation and allowed sufficient time to form a homogenous gel-like system during fermentation, i.e., no phase separation during fermentation that will result in an inhomogeneous product. Increasing the homogenization pressure reduced the particle size allowing the formation of finer and whiter emulsion with improved physical stability against separation. The hardness was the highest for the yogurt alternatives fermented from the emulsion formed at 200 MPa, suggesting that HPH can significantly assist in attenuating the physical properties of plant-based milk alternatives. The water holding capacity values of the fermented gels were above 80%, which can be an advantage for improving the product shelf life. While many commercial yogurt alternatives contain stabilizers or have relatively low protein content, this suggested process allowed the production of a stabilizer-free yogurt alternative with higher protein content and can be a promising tool for various novel yogurt alternatives.