**Gelatinization of waxy and non-waxy rice starch under high hydrostatic pressure (HHP) as influenced by alginate addition.**

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High hydrostatic pressure (HHP) processing is reported to induce gelatinization in starch molecules1. Pressure-mediated gelatinization of starches from a wide variety of botanical sources including rice has been extensively reported in literature2. The majority of reported investigations on HHP-induced rice starch gels did not explore the impact of the addition of distinct types of alginates. In this work, HHP-induced waxy and non-waxy rice starch gels in combination with two alginate types (SAT1, SAT2) with distinct M/G ratios were produced by applying HHP up to 500 MPa at 20°C for 20 min. Impact on the physicochemical properties of the obtained gels was investigated and compared to the heat-gelatinized counterparts by rheological and texture determinations, crystallinity (XRD), microstructure (SEM), short-range ordered structure (FTIR) and retrogradation (DSC). Overall, lower G’ and G” values (*p* < 0.05) and SEM graphs suggested a less damaged granular structure in the pressure-gelatinized non-waxy rice starch formulations in comparison to the heat-induced counterparts, demonstrating incomplete gelatinization. Contrarily, pressure-induced waxy rice starch gels were more sensitive to pressure processing due to the lack of amylose, which induced complete gelatinization as suggested by the higher (*p* < 0.05) G’ and G” values and SEM graphs in comparison with the thermal-gelatinized counterparts. These findings were then further confirmed by XRD, FTIR and texture determinations, and suggest that HHP processing could be regarded as a novel green-processing approach to physically gelatinize
and/or modify of starch-alginate systems.

*References:*

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