EFFECT OF HYDROTHERMAL TREATMENT ON THE CHEMICAL AND STRUCTURAL COMPOSITION OF *Allium* PUREES FOR EDIBLE FILMS

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Summary: Producing edible films from alliums, such as onion and garlic, is a promising strategy for food packaging due to their gel-forming polysaccharides and bioactive compounds. Hydrothermal pretreatment enhances this process by extracting and modifying polymers, improving structural cohesive properties for packaging and promoting xylooligosaccharides production. This study evaluated hydrothermal pre-treatment effects on the chemical and structural composition of white and red onion (*Allium cepa L*.) and garlic (*Allium sativum L.*) for active film development. First, the bulbs with skin were washed and hydrothermal pretreated in an autoclave at 1.2 kgf/cm2 for 30 minutes. The biomass was then mixed and fractionated to separate the solid and liquid phases. Purees samples, both before and after pretreatment, were analyzed for chemical and structural composition, specifically assessing cellulose, hemicellulose, lignin, extractives and ash content. The biomass of white onion and red onion showed higher levels of cellulose (~34 % and ~29 %, respectively) and extractives (~23 % and ~25 %, respectively), with significant increase after hydrothermal pre-treatment. These increases indicate the effectiveness of the hydrothermal treatment in modifying the biomass composition. In contrast, the hemicellulose content showed no significant variations between the different puree types, with the highest values observed before hydrothermal treatment (~18%, ~16 % and ~14 %, respectively). Chromatographic analysis in liquid phase revealed similar patterns across the samples, identifying glucose, xylose and arabinose. Red onion and white onion had higher glucose (~9 g/L and ~7 g/L) and xylose (~7 g/L and ~5 g/L). In comparison, garlic biomass had much lower concentrations of glucose (~1 g/L) and xylose (~4 g/L). During hydrothermal treatment, hemicellulose is solubilized and depolymerized into xylooligosaccharides. This process modifies structural carbohydrates and breaks down hemicellulose to produce xylooligosaccharides. It is a promising strategy for modifying allium pulp to produce cohesive films suitable for active food packaging. **Funding Agencies:** São Paulo Research Foundation (FAPESP), process n° 2023/03583-9 and Coordination for the Improvement of Higher Education Personnel – Brazil (CAPES) – Financing Code 001.