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8th World Congress on Agriculture & Horticulture

and

16th Euro Global Summit on FOOD & Beverages

March 02-04, 2017 Amsterdam, Netherlands

Novel phenolic derivatives of pectin: Enzymatic synthesis and properties

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Pectin is a natural biopolymer extracted mostly from citrus peel, sugar beet and apple pomace. In order to improve its functional properties and then to enlarge the field of its potential applications, pectin was functionalized according to two approaches. The first one was in an oxidative reaction between pectin and ferulic acid (FA) catalyzed by laccase leading to pectin-F. The second one was based on the physical adsorption of FA-oxidation products (POX) on pectin leading to pectin-POX. The POX was previously obtained through oxidative reaction of FA catalyzed by laccase. A comparative study was performed aiming to determine the impact of each functionalization pathway on the properties of pectin. As a result of this study, a significant improvement of the antioxidant properties of pectin-F (26.25±0.62) and pectin-POX (15.01±1.38) in comparison to native pectin, due to the grafting of oxidized phenols. This trend was even more pronounced in the case of pectin-F. In addition, the functionalized pectin powders were less hygroscopic and viscous than the native pectin and presented different gelation properties in the presence of calcium ions. Finally, the thermal properties and the structural characteristics of different pectin samples shown were also affected due to the functionalization. As a conclusion, both approaches led to derivatives with improved properties that could widen the field of applications of pectin.

Biography

Jordane Jasniewski works on the fundamental study of the mechanism of complexation and coacervation between biopolymers of a protein and/or polysaccharide nature. The main objective of his work is to better understand the energetic mechanisms that are found during the origin of various formed entities such as macromolecular complexes, complex aggregates and coacervats.

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