COVALENT PECTIN/ARABINOXYLAN MIXED GEL FOR Saccharomyces boulardii ENTRAPMENT IN ELECTROSPRAYED MICROBEADS

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Ferulated polysaccharides, such as pectin and arabinoxylan, possess unique properties that make them intriguing for food texture and/or probiotic immobilization. These properties are particularly relevant in the context of *Saccharomyces boulardii*, a probiotic yeast known for its intestinal health benefits but limited by viability loss under environmental stress. In our study, we utilized ferulated pectin (FP) from sugar beet solid wastes and ferulated arabinoxylan from maize waste from bioethanol production (distilled dry grain with solubles) to form a covalent gel and entrap *S. boulardii* (2.08 X 108 cells/mL) in gels and microbeads by electrospraying. We also determined the antioxidant activity of these gels and microbeads using the ABTS and DPPH methods. The FP/AX macro gel exhibited an antioxidant activity of 19.02 ± 0.63 TEAC for both ABTS and DPPH, while the FP/AX + *S.* *boulardii* microbeads showed an activity of 20.66 ± 0.03 TEAC and 6.85± 0.29 TEAC for ABTS and DPPH, respectively. Furthermore, the Fourier Transform Infrared Spectroscopy analysis in FP/AX gels and FP/AX microbeads demonstrated that both polysaccharides conserved their molecular identity despite the oxidative coupling of their respective ferulate residues. Scanning electron microscopy (SEM) showed an imperfect honeycomb-like microstructure appearance with an average cavity diameter of 19 µm for the FP/AX gels. FP/AX + *S. boulardii* microbeads exhibited a wrinkled, rough surface and an average diameter of 344 µm. Finally, a gastrointestinal tract simulation showed the release of *S. boulardii* cells in the colonic compartment, reinforcing the potential for the FP/AX covalent system to entrap *S. boulardii* and deliver it to the colon.