Transthyretin (TTR) variants with decreased conformational stability are related with different forms of hereditary amyloidoses and in particular, agents for transthyretin amyloidosis.

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Active packaging is an increasingly reliable technology for assuring the safety and maintenance/improvement of the organoleptic traits of the enclosed food products. Bio-based materials with a wide set of highly impressive characteristics were assembled through a simple and effective methodology to produce affordable edible antibacterial active films. Bacterial cellulose (BC) was used as film scaffold since it is an extremely pure polysaccharide that possesses noteworthy properties for food casing such as high toughness, shape retention and works as a stabilizing agent. Functionalization of BC was achieved through absorption of lactoferrin (LF), a bilobar protein mainly extracted from milk that possess a numerous plethora of activities, such as broad spectrum antibacterial effect, immunoregulatory properties, and also promotes bifidobacteria and intestinal epithelium growth. These films were extensively characterized in terms of their physicochemical characteristics, bactericidal efficiency and cytotoxicity. The LF absorption and de-absorption profiles of the BC films were registered. Surface free energy, water vapor permeability, attenuated total reflection Fourier transform infrared spectroscopy, dynamic mechanical analysis (in water saturated conditions) and swelling profile, and other critical characterization techniques were employed. The antibacterial properties were assessed through the determination of the specific growth rate impact, “live and dead” fluorescence, scanning electron microscopy and colony forming units’ count; using two model microorganisms (Escherichia coli and Staphylococcus aureus). The contact killing properties were evaluated for standalone films and for a specific case study (fresh sausage). Finally, the films cytotoxicity was determined after digestion in a dynamic mimetic artificial gastrointestinal digestive system. All attained results lead us to conclude that the obtained active edible films display an effective and significant antimicrobial activity against both Gram — and + revealed no cytotoxicity, prior and after the gastrointestinal digestion. Thus, these new films present a high potential to safely functionalize the encased foods, while providing prophylactic properties.


Edible lactoferrin bacterial cellulose films as an effective and low-cost antimicrobial active packaging

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Anthocyanin-rich fraction from Portuguese blueberries (Vaccinium corymbosum L.) attenuates colon inflammation in a rat model of inflammatory bowel disease: comparison with 5-aminosalicylic acid

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Anthocyanins are common dietary polyphenols, widely studied due to their antioxidant activity and ability to modulate inflammatory pathways. Its poor intestinal absorption associated with a high intake makes the gastrointestinal tract the compartment where the concentration of these compounds achieves the highest value, which may play an important role in modulating chronic intestinal inflammation. Thus, the aim of this work was to prepare and characterize an anthocyanin–rich fraction (ARF) from Portuguese blueberries (Vaccinium corymbosum L.) and to assess its anti-inflammatory action in a Wistar rat model of inflammatory bowel disease (IBD), as compared with 5-aminosalicylic acid (5-ASA), a well-established anti-inflammatory drug used in IBD. The ARF was prepared with blueberries obtained from Sever do Vouga region (Portugal), by homogenization and separation by solid phase chromatography, and chemically characterized by HPLC–DAD analysis. Such fraction showed a very high content in total anthocyanins and a huge diversity of these compounds, with malvidin–3–galactoside in the highest concentration. To assess the ARF anti-inflammatory action in the rat model of IBD, we administered this fraction (10 mg anthocyanin/kg/day) by intragastric infusion, after colitis induction by trinitrobenzene sulphonic acid (TNBS), during 8 days, before the rats were sacrificed. The anti-inflammatory effects of 5–ASA (100 mg/kg/day) alone and combined with ARF were also evaluated. During all the experience, rats were monitored daily in terms of body weight and stool consistency. After the sacrifice, the extent of colonic injury was assessed macroscopically and to assess its anti-inflammatory action in a Wistar rat model of inflammatory bowel disease (IBD), as compared with 5-aminosalicylic acid (5-ASA), a well-established anti-inflammatory drug used in IBD. 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Furthermore, the measured inflammatory mediators were significantly decreased by ARF administration in a much higher extent than by 5–ASA alone. In addition, the therapeutic effect of this drug was improved by its association with ARF. In conclusion, blueberries anthocyanins showed a relevant anti-inflammatory action on TNBS–induced colitis, improving the efficacy of 5–ASA, suggesting its potential role in management of inflammatory bowel disease.


Transthyretin chemical chaperoning by flavonoids: structure–activity insights towards the design of optimized pharmacological agents for transthyretin amyloidosis.

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