**The active performance of gallic acid-incorporated chitosan films**

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In the recent years, the valorisation of food processing wastes to produce active food packaging is arising in order to close the loop in the food industry and address the objectives of the sustainable development1. Natural polymers are of great interest due to their inherent biochemical properties and biodegradability. One of these polymers is chitosan, a polysaccharide derived from chitin, commercially obtained from crustaceans’ shells2. In this study, chitosan films were prepared with gallic acid (0, 10 and 20% wt. based on chitosan), as active compound, and glycerol (15% wt. based on chitosan), as plasticizer. Physico-chemical and mechanical properties, as well as antioxidant and antimicrobial activities were analysed in order to assess the suitability of the films as active packaging. Concerning optical properties, it is worth noting that the film transparency was maintained after gallic acid addition. The shift of some characteristic FTIR bands, specifically those related to O-H and N-H stretching and to amide II, indicated the interactions between the mixture components, which led to the improvement of the functional properties of chitosan films. In particular, tensile strength increased when the gallic acid concentration increased. Regarding the antimicrobial activity, gallic acid-incorporated chitosan films were found to be effective against *Escherichia coli* DH5α.Furthermore*,* DPPH values showed an increase of antioxidant from 51 to 96% for neat chitosan films and chitosan films with 10 and 20% wt. gallic acid, respectively. Finally, it is worth noting that gallic acid was released from the film in a controlled manner.

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*References:*

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