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PhD in Biotechnology - 38th cycle

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Novel active packaging systems obtained from renewable sources

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The ever-growing global population and the simultaneous increase of food demand have had a dramatic consequence on the environment over the last decades. The impact of food loss and waste, together with the footprint of plastics used for food packaging, have raised the need for novel sustainable solutions. Biodegradable active packaging, materials able to promote food preservation while avoiding plastic waste accumulation, represents a new generation of food packaging, expecting to play a key role in this context. The idea of the project is to valorize different kinds of wastes and convert them into value-added products, converging into the formulation of active packaging materials. Novel functional materials, exploitable for semi-rigid packaging, coating or wrapping of perishable foods will represent the final target of the project. In particular, hydroplastic bio-composites based on protein from SOCs[1] and polysaccharide (e.g. chitosan) will be manufactured. These materials reinforced using enzymes or natural filler (as lignin or nanocellulose)[2] will be functionalized with bioactive extracts coming from Callistemon citrinus[3], possessing high quality antioxidant, cytoprotective and antiangiogenetic potential that may compete well with synthetic antioxidant drugs in the market.

References

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