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Development of bioplastics from sustainable materials using different strategies

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Conventional packaging based on petroleum have been used in a wide variety of application due to its durability, mechanical and barrier properties, ease of processing and low cost. However, in recent years there is an increasing concern due to environmental problems because such packaging takes hundreds of years to decompose. Sustainable packaging from renewable resources has been widely studied for replacement of synthetic polymers. Some drawbacks of biodegradable plastics still limit their commercial application, such as poor mechanical and water barrier properties, which make them difficult to use in food packaging. Different strategies has been used to overcome these limitations, in our group we are working with individual, blends and multilayer films, adding nanoparticles and active compounds, we are also modifying the structure of the films using plasma and UV techniques. The raw materials that we are using to develop those polymers are proteins (from fish, corn and wheat) and also polysaccharides as starches (from potato, cassava and rice). To obtain active packaging the researches are incorporating some compounds with antimicrobial and antioxidant activities as extracts of pink pepper, essential oil of crave and oregano. We are also developing some totally soluble packaging using chia seeds and whey protein.

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