

## Poly (lactic acid) biopolymer material with improved barrier and mechanical properties

CSIC has developed a new biopolymer material based on poly (lactic acid) with improved barrier and mechanical properties that make it an excellent food packaging material.

Industrial partners interested in co-developing and exploiting this technology under a patent license are sought.

### PREBIOTIC DISACCHARIDES AND THEIR INDUSTRIAL PRODUCTION

The indiscriminate use of plastics for food packaging has caused serious ecological concerns due to environmental pollution caused by accumulation of non biodegradable solid waste. This has led to the development of new packaging materials based on natural biopolymers. Poly (lactic acid) (PLA) is a commercially available, renewable biopolyester with great potential as a food packaging material. However, its use poses some notable drawbacks mainly associated with a low thermal resistance, low brittleness and insufficient oxygen and water barrier as compared to other benchmark packaging polymers used in the industry. CSIC by incorporating bacterial cellulose nanocrystals into polymer matrices has produced composite materials with improved barrier and mechanical properties as compared to polymer matrices without these reinforcements. The use of a natural source for its production, keeps its biodegradability, becoming an excellent and innovative solution for the food packing industry.



### MAIN INNOVATIONS AND ADVANTAGES

- Reduction of the environmental impact caused by the use of conventional plastics by using biopolymers.
- Improvements on the mechanical and barrier properties of biopolymers such as poly (lactic acid) extending its use to a greater number of applications.
- Improvements on polymer matrices properties through the use of cellulose. This material has good physical and chemical properties while preserving a renewable character, biodegradability and abundance.
- More specifically, the use of bacterial cellulose, a material with better mechanical properties, better crystallinity and higher purity than plant cellulose.
- Production of fully renewable and biodegradable materials.

### PATENT STATUS

Priority patent application



### FURTHER INFORMATION

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