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EU project YPACK develops innovative biodegradable food packaging extending food shelf life

Brussels, 19 May 2020 - Plastic pollution and disposal of single use plastic packaging is a huge sustainability issue in need of innovative solutions: latest results from the **EU-funded project YPACK show that an innovative formulation of active ingredients could allow this biodegradable food packaging to prolong the shelf life** of foods and therefore reduce food waste. Over the past couple years, YPACK has developed a bio-based plastic alternative to traditional plastic food packaging. YPACK's compostable packaging is made from a sustainable biopolymer, poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV), produced from industry by-products cheese whey and micro-cellulose from almond shells. Biodegradability tests show full degradation within the regulated 90 days.

Dr. José María Lagarón, from The Spanish National Research Council (CSIC), YPACK project coordinator, said: *"The ideal packaging involves lower carbon and water footprints, is biodegradable and/or compostable, makes use of wastes or by-products, is properly eco-designed, safe and has the right preservation properties to minimize food waste. YPACK is delivering on this vision."*

Active packaging breakthrough

The biopolymer PHBV was used to create very thin "bio-paper" from food industry by-products.

Zinc oxide and oregano essential oil, two active ingredients, were incorporated into the bio-papers. These compounds have good antimicrobial activity against two bacteria that can cause food poisoning: *Staphylococcus aureus* and *Escherichia coli* (E.coli). Researchers **discovered an optimal ratio of the active ingredients that showed successful** short-term (15 days) and medium-term (up to 48 days) **anti-bacterial effects** in 'open' and 'closed' systems. This means the formula could be used for food products where the packaging is opened and closed several times, for example to package ham slices or bread. The active components could be used in both trays and flow films as an active layer.

These promising laboratory results show the **potential of bio-based active packaging to increase the shelf life of fresh products like meat, fruits & vegetables and fresh pasta**. However, due to regulatory restrictions within the EU, the final YPACK packaging will not, in the first instance, contain an active layer but will be made purely from biodegradable PHBV.

What's next?

The YPACK project is entering the next phase of consumer acceptance and shelf-life studies in the spring of 2020. In a preliminary consumer study done by YPACK including over 7000 consumers the results show they did not oppose the use of almond shells and cheese whey in food packaging materials. Passive and active packaging technologies were similarly acceptable to the consumers. Consumers across 7 countries (Denmark, France, Hungary, Netherlands, Portugal, Spain, Turkey) participated in this study.



This three-year project reaches its end in October, moving closer to seeing YPACK packaging on the market. The full results of the YPACK project will be presented at the final conference on the 1st of October in Brussels.

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About YPACK

YPACK is a 3-year EU-funded project with the aim of scaling up production and commercially validating two innovative food packaging solutions based on PBHV, a type of biopolymer polyhydroxyalkanoate (PHA); a fully compostable flow pack film and tray. This new packaging will make use of food industry by-products (cheese whey and almond shells), assure the biodegradability, and reduce food waste in the frame of the EU Circular Economy strategy.

The validity of the packaging will be assessed in fresh products (meat, fruits & vegetables and fresh pasta), which are the most significant contributors to food waste. A consumer profiling and market study will be performed to identify consumers' preferences and market needs and match them with the new EU regulations and packaging materials development.

In 2019 the YPACK technology was leased to Ocenic Resins S.L. to produce biodegradable straws ([press release](#)).

Website: www.ypack.eu

Twitter: @SciFoodHealth #YPACK

LinkedIn: *'Bioplastic and sustainable food packaging'* stakeholder group

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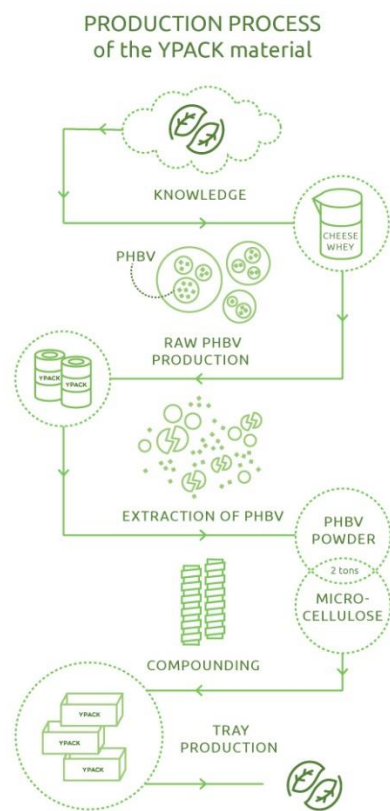
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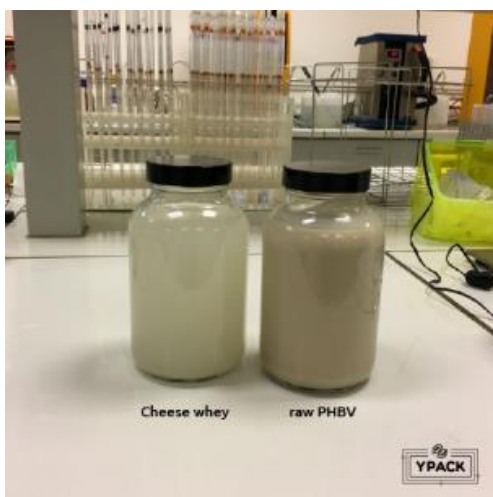


YPACK flow film



YPACK trays

YPACK material production process



Cheese whey (raw material) and raw PHBV (biopolymer)