

COM4PHA Project Advances Development of Biodegradable Bioplastics for Packaging and Agricultural Applications

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The COM4PHA project, a collaborative research initiative involving Venvirotech, ENPLAST, and the Plastics Technology Centre (AIMPLAS), is making significant strides in the development of novel biodegradable bioplastics based on polyhydroxyalkanoates (PHA). The project's primary objective is to create PHA-based materials that can be processed using conventional technologies, enabling their use in applications currently dominated by petroleum-derived plastics across the cosmetics, food, and agricultural packaging sectors.

Polyhydroxyalkanoates (PHAs) are biocompatible and biodegradable polymers synthesized by microorganisms, exhibiting characteristics closely resembling those of petrochemical plastics. Current research within the COM4PHA project is focused on identifying cost-effective alternative substrates, such as agro-industrial waste and industrial by-products, alongside efficient extraction strategies to reduce production costs. This aims to facilitate the broader adoption of PHAs in the market. A key aspect of the project involves optimizing the processability of commercially available PHAs through conventional technologies, allowing for their application in diverse areas within the plastics industry and enabling scalability for supply to sector companies.

Specifically, the COM4PHA project is focused on developing new formulations of bioplastics based on the PHBV copolymer for applications in packaging and agriculture. Innovative processing technologies tailored for this polymer type are being explored, including hollow-body blown extrusion for bottle manufacturing and the application of the copolymer as a coating on paper substrates and agricultural mulch films.

The overarching goal of the project extends to optimizing the synthesis of PHA materials and scaling up

production to industrial levels. This will enable the supply of PHBV for applications currently utilizing conventional, non-biodegradable materials.

The COM4PHA project is being coordinated by Venvirotech, a biotechnology company specializing in the transformation of organic waste into PHA bioplastics using its proprietary bacterial technology. ENPLAST, a company with expertise in the creation and manufacturing of a wide range of plastic packaging solutions, is also a key participant in this collaborative effort. The research and development expertise of AIMPLAS, the Plastics Technology Centre, is instrumental in achieving the project's ambitious goals.