

BIOBOTTLE project comes to successful close

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Spanish research and technology center AIMPLAS has announced that the BIOBOTTLE project, launched in May 2014 as a joint project with seven other European technology centers and companies within the scope of the Seventh Framework Programme, has been brought to a close.



The project was directed at solving the waste problem caused by the high density polyethylene bottles used to package dairy products. Europeans today are the biggest consumers of dairy products in the world, averaging 261 kg per year, according to the data provided by FAO in 2011. Dairy packaging is therefore a significant source of plastic waste. And although HDPE is completely recyclable, only 10-15% of the bottles were, in actual fact, being recycled.

This was due in part to the very high temperature washing process required during recycling to eliminate product residue and odor.

The BIOBOTTLE project therefore sought to develop a biodegradable and compostable material from which to produce both the large-sized multilayer bottles or bags used for packaging milk and the like, as well as the smaller monolayer bottles, used to package probiotic products. A compostable solution would do away with the need to separate the packaging from the rest of the organic waste at the end of life.

One of the main difficulties confronting the researchers was the creation of a biodegradable material that met the same high standards as the currently used HDPE. In other words, the material had to be able to withstand the thermal treatments, such as the sterilization or pasteurization, which dairy products are required to undergo.

The researchers working on the project successfully developed a packaging material that complied with the mechanical and thermal aspects required for dairy applications, and that passed the microbiological tests without affecting the product's organoleptic properties. The results are monolayer bottles and caps and multilayer bags that are able to resist temperatures up to 95°C.

A reactive extrusion process was used to modify the existing commercial material such that it met all the requirements set. The material is moreover processable by conventional methods, which makes it possible to manufacture the various different packaging formats.

The newly developed biopolymers, which have also passed the composting tests carried out, will be used to produce new packaging for the dairy products described above. The new packaging is expected to add less than 10 % to the final cost of the packages product.

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