

MICROORGANISMS FOR BPA DEGRADATION WITH INULINASE ACTIVITY

Technology for Licensing

Keywords:

BPA, bisphenol A, xenobiotic, *Bacillus*, probiotic, phytosanitary, biodegradation, bioremediation, gut microbiota

Description:

Bisphenol A (BPA) is a xenobiotic, widely used as a plastic precursor, with a growing presence in the environment, diet and cosmetics, among others. The pervasiveness of this substance, along with its analogues and derivatives, has been linked to the development of endocrine and metabolic diseases, such as obesity, diabetes, metabolic syndrome, fatty liver disease, hyperactivity disorders or cancer.

Researchers at the University of Granada have identified a *Bacillus* sp. strain from the human gut microbiota, with the ability of degradation and removal of bisphenol A.

Whole Genome Sequence analysis of these bacteria, with inulinase activity, revealed the presence of a complete enzymatic, molecular and genetic arsenal, specific for endocrine disruptors degradation, such as BPA. They are capable of tolerating and metabolizing it, while using it as a carbon source.

This activity evidences this strain's potential, either alone or in combination with others, for the production of probiotic foods and/or plant probiotics for its addition to phytosanitary compositions, taking advantage of the ability to modulate those xenobiotics, relieving its endocrine pathogenesis and/or its use in bioremediation.

This technology focuses on using bacteria within the *Bacillus* spp. species, which are capable of degradation and removal of BPA in addition to other endocrine disruptors, for the development of probiotic or enzymatic formula with use in health, feed and food, and/or the environmental industries.

Advantages and Benefits

» High efficiency removal

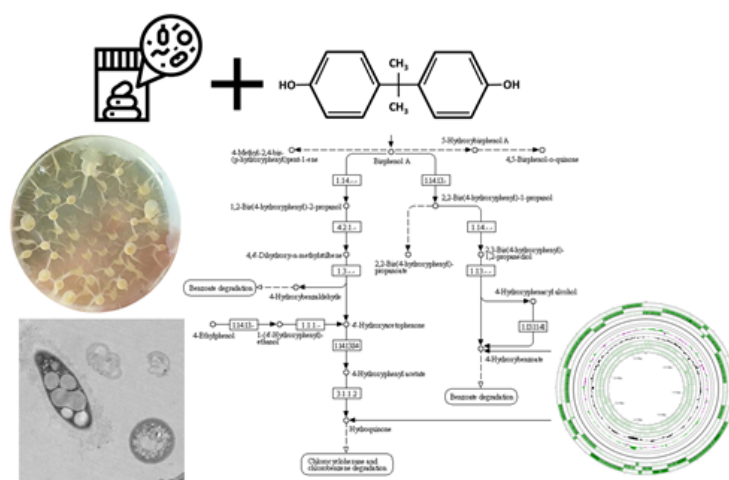
Bacillus sp AM1 strain can remove 84% BPA in 72 hours.

» Multitude of applications:

- Nutrition: functional foods.
- Human health: endocrine pathogenesis modulation.
- Agriculture: phytosanitary compositions for plants.
- Bioremediation: water contaminants removal.

» Safe microorganisms

These bacteria have been isolated from the human microbiota, so they will very possibly meet the safety criteria and be granted Qualified Presumption of Safety (QPS) status.



BPA gene-encoding enzyme pathways

Actuación en el marco del Proyecto ILIBERIS: Actuaciones Singulares de Transferencia de Conocimiento en el CEI BIOTIC. Objetivo prioritario OP.01 "Potenciar la investigación, el desarrollo tecnológico y la innovación"

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Contact:

Oficina de Transferencia de Resultados de Investigación (OTRI) - Universidad de Granada