SUSTAINABLE PRODUCTION OF BIOFUEL (BIOETHANOL) FROM SHELLFISH WASTE

TECNOLOGÍA PATENTADA

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RESUMEN

The research group of Plant Pathology at the University of Alicante has developed a new process by using fungi to produce biofuel (bioethanol) and fungal biomass for agrobiotech use from shellfish waste. It is a sustainable alternative to agroforestry crops currently used.

The current technology stands out because it uses chitosan as the sole source of nutrients, and produces bioethanol in profitable, sustainable and environmentally friendly manner.

The research group is looking for companies or investors partners interested in acquiring this technology for commercial exploitation.

VENTAJAS Y ASPECTOS INNOVADORES

ADVANTAGES OF THE TECHNOLOGY

- Fungi can **grow under high chitosan concentrations** (more than 2 mg/ml), which are toxic to other microorganisms conditions, thus **reducing culture contamination.**
- Fungi use **chitosan** as a **sole source of nutrients.**
- Fungi produce a large amount of **reducing sugars** which are fermented into **ethanol**.
- Fungi can grow under **anaerobic conditions**.
- Fungi are able to **tolerate** the amount of **ethanol** that they themselves produce in the culture medium (no self-inhibition occurs).
- Fungi encode in their genomes zinc-dependent **alcohol dehydrogenases** and **pyruvate decarboxylases** that are required to produce **ethanol**.
- Fungi produce **ethanol** and **fungal biomass** from **chitosan rich residues** of the **shellfish industry**, thus reducing pollution they cause.
- The process is sustainable and **environmentally friendly**.
- It is **profitable** process.

INNOVATIVE ASPECTS OF THE TECHNOLOGY

We have developed a new procedure for producing **biofuel** (ethanol) using **shellfish industry waste** and nematophagous or entomopathogenic fungi. It is a **sustainable non-food alternative to crops or agroforestry waste** processed, instead of the traditional fermentation processes.

APLICACIONES DE LA OFERTA

This technology is part of the field of **Biotechnology** . It is a novel process for ethanol and fungal biomass production as by-product using entomopathogenic and nematophagous fungi and a source of chitosan.

Applications:

- **Biofuel** production (**bioethanol**) as an alternative to ethanol produced by fermentation processes (using yeast) from plant as raw material.
- Production of **fungal biomass** for sustainable crop protection.
- **Biodegradation** and **decontamination** of **shellfish industry** waste (the high nitrogen content of this waste leads eutrophication, so that its uncontrolled disposal has serious environmental problems).

COLABORACIÓN BUSCADA

Companies or investors partners interested in acquiring this technology for **commercial exploitation** through:

- License agreement of the patents.
- Search for funding opportunities to develop new applications adapted to the specific needs of the company.
- Technology and knowledge transfer agreements.
- Technical reports and scientific advice services.
- Standardization, calibration, development of national and international technical standards.
- Provide technical support in those techniques that require highly skilled personnel or sophisticated instruments that are not available for the applicant.
- Staff exchange for defined time periods (eg. for learning a technique).
- Rental own equipment to customers who wish to conduct their own tests (through own infrastructure of the Department of Marine Sciences and Applied Biology or Common Research Facilities (SSTTI) at the University of Alicante).