Creating and testing a method for controlling the air quality based on a new biotechnological tool. Use of a devitalized moss clone as passive contaminant sensor

In this project, MOSSCLONE, the aim is to develop a method for controlling air quality based on a new biotechnological tool. The project is financed under FP7-ENVIRONMENT and is coordinated by UNIVERSIDAD DE SANTIAGO DE COMPOSTELA, Spain. The total budget is €4,484,583.36 with an EU contribution of €3,492,022.

The project duration is from April 1, 2012, to March 31, 2015.

The project's goal is to create and test a method for controlling air quality based on a new biotechnological tool. The use of devitalized moss clones as passive contaminant sensors is proposed. The European Council Directive 96/62/EC requires States to make periodic information available about air quality within their territories. However, current methods are expensive and cannot be used on a large scale. Thus, it is necessary to develop inexpensive and robust tools for monitoring air quality across Europe.

Mosses, due to their high efficiency in loading both particulate and gaseous forms of organic pollutants, inorganic and radioactive, may be an optimal choice. Until now, they have been used as biomonitoring tools, but recently, several investigators have realized the benefits of using devitalized mosses because it allows disposing of transplants in well-defined initial conditions. This really leaves the field of biomonitoring, as the material is used dead, and approximates to the setup of a new biotechnological tool.

Biotechnological techniques allow cultivating mosses in bioreactors, making it possible to isolate a moss clone, cultivate it, and produce a standard material (potentially patentable) that would be comparable to the use of resins or polymers for atmospheric quality control. Mosses behave as pollutant exchange resins, and their use as filters has been considered for decades. For these reasons, we propose the implementation of a project with the following contents: 1) selection and culture of a moss clone; 2) characterization - molecular, physical, physical-chemical and multi-elemental - of the cultivated clone; 3) large-scale production of moss-bags for transplants; 4) comparison between the data collected using...
moss-bags and traditional techniques (i.e. bulk deposition collectors, particles samplers and gaseous samplers) to allow tool validation; 5) to do a methodological standardization to develop a protocol for using moss-bags; and 6) to develop a method for identification of pollution focus.

Wissenschaftliches Gebiet

/natural sciences/chemical sciences/polymer science
/natural sciences/physical sciences/theoretical physics/particles
/engineering and technology/environmental biotechnology/bioremediation/bioreactor

Programm/Programme

FP7-ENVIRONMENT - Specific Programme "Cooperation": Environment (including Climate Change)

Thema/Themen

ENV.2011.3.1.9-1 - Eco-innovation!

Aufforderung zur Vorschlagseinreichung

FP7-ENV-2011-ECO-INNOVATION-TwoStage
Andere Projekte für diesen Aufruf anzeigen

Finanzierungsplan

CP - Collaborative project (generic)

Koordinator
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