

5th World Congress on **Biotechnology**

June 25-27, 2014 Valencia Conference Centre, Valencia, Spain

DISKEASY: *In-vitro* diagnostics device for detection of multiple tropical infections

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Effective medical care is directly related with rapid diagnostics in order to give treatments in minimum time to prevent disease transmission, reducing healthcare costs and improving patient life. What is advisable in the developed world is absolutely necessary in developing countries. The current rapid diagnostic tests for HIV, malaria, dengue, tuberculosis... are developed for use in an overgrown society. In contrast, in the third world, there is not a guaranteed power supply or no means to purchase diagnostic kits or drugs, neither trained personnel. Under these conditions, there is a great chance to spread diseases, until being epidemics. Understanding the real need for diagnostic tools in infectious disease prevention, a sensitive, selective, rapid (<30 min), portable, low-cost (0.5 €/disk), and integrated multi-analyte; our group has developed a biosensing system based on compact disk technology with features which makes it very useful for low-income settings. The principle of the assay is based on the immobilization of specific receptors on disks, in a microarray format, in order to identify the disease biomarkers in blood. Each positive assay generates an insoluble reaction product which made a change in the reflective properties of the disk. The disk drive quantifies this interference and correlates them well with the concentration of the bioreaction product, resulting in quantitative measurements.

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A phytotoxicity of *Ceratophyllum demersum* grown with diesel contamination in hydroponic cultures

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The aim of this study was to assess the ability of *Ceratophyllum demersum* to phytoremediate diesel contamination simulated wastewater at different concentrations (25, 50 and 100 mg/L). To achieve this aim, the plant species was subjected to a 15 day phytotoxicity test. The phytotoxicity test with diesel demonstrated the tolerance of *Ceratophyllum demersum* to diesel toxicity. During 15 days of visual monitoring, the plant can survive at diesel concentrations of 25 and 50 mg/L but was inhibited at high concentration of diesel (100 mg/L). The results showed that the growth of *C. demersum* was well adapted to 25 and 50 mg/L diesel but was affected severely by a relatively high diesel concentration of 100 mg/L. The degradation and removal of diesel during 10 days differed significantly between the treatments with and without plants at diesel concentrations of 25 and 50 mg/L. The first 7 days of treatment showed a clear difference in diesel removal between aquaria with and without plants. This result indicates that the phytoremediation of diesel was accelerated by *C. demersum*. Generally, the *C. demersum* is an important emergent plant species that can be effectively applied to phytoremediation of water contaminated with diesel up to 50 mg/L.

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