

3rd International Conference and Exhibition on **Biosensors & Bioelectronics**

August 11-13, 2014 Hilton San Antonio Airport, San Antonio, USA

Design of biosensor expressing luciferase reporting gene under pbr promoter for detection of lead

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Lead is one of the four metals having most complications on human health. Although it does not have any vital effect, it can be collected in living systems to be toxic. Lead enters environment by different approach. One of methods for heavy metals impurity detection in environment is cellulous biosensor. Cellulous biosensor is cell consisting of one reporting gene, under control of promoter that is sensitive to an element (such as heavy metals). One of the important operons in *Ralstonia* bacterium resistance to heavy metals is pbr. This research designed biosensor consisting pbr promoter with Luciferase reporting gene in *E. coli* (DH5 α) as host. pbr promoter sequence with pbrR as regulator gene in 634 nucleotide size is synthesized and luciferase reporting gene in pGL3 plasmid is located under this promoter. Then recombinant plasmid is transferred to *E. coli* (DH5 α) and used to detect different concentration of Lead in medium. Least concentration of lead that can meaningfully express luciferase reporting gene was 1 μ M and maximum concentration of it was 100 μ M. It was noted that concentration above 100 μ M caused decrease in reporting gene expression through toxic effects on biosensor survival. This study indicates that this biosensor can detect 1-100 μ Mol concentration of lead heavy metal in watery environments.

Biography

Nourmohamadi E completed his BSc in Biology from Ferdowsi University and placed second among 12 thousands candidates in the graduate exam in molecular Genetic and then earned this degree from Tarbiat Modares University. He is pursuing his PhD course in Biotechnology from Mashad University of Medical science.

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