Abstract

Atrazine and chlorobenzene are chemicals commonly found in pesticides and herbicides that pose a threat to both humans and the environment as endocrine-disrupting pollutants. Our Biobuilder design targets the challenge of chemical contamination in water and soil by implementing an innovative and sustainable bacteria-based remediator of these two chemicals. Utilizing Pseudomonas aeruginosa strain ADP's exceptional ability to consume atrazine as its nitrogen source, we intend to integrate atzA, atzB, and atzC and DEF genes into a Pseudomonas putida strain, a compatible early colonizer in water and soil sources. P. putida strain GJ31 has been identified to possess a chlorobenzene degradation pathway, with genes encoded on plasmid pKW1’s clusters and chromosome. By introducing atrazine catabolic plasmid pADP-1 into P. putida GJ31, we can apply a cost-effective and environmentally friendly approach to alleviate the hazards of two common toxins. Evaluating the effectiveness and safety of this design will demonstrate the design’s potential for atrazine and chlorobenzene degradation.