Dabrowska, G., Hrynkiewicz, K., Janczak, K., Zuranska, M. Modified Soil Bacteria and Their Potential Application to Improving Fitoremediation of Trace Metal-Contaminated Environment. ***Ochrona Srodowiska*** **2014, Vol. 36, No. 1, pp. 21–26.**

Abstract: Eight bacterial strains from areas contaminated with trace metals were selected for the experiments: *Bacillus* sp., *Bacteroidetes bacterium*, *Flavobacterium* sp., *Luteibactor rhizovicina*, *Pseudomonas fluorescens*, *Pseudomonas* sp., *Serratia entomophila* and *Variovorax* sp. Bacteria were transformed with pET21a expression plasmid encoding *Brassica napus* L. metallothionein 2 (*BnMT2*). Transformant colonies were examined for growth on solid culture medium containing trace metal ions (Cd and Pb). It was found that most of the analyzed bacterial strains were resistant to ampicillin, though the antibiotic inhibited their growth. It was demonstrated that growth of bacterial strains on a medium containing Pb ions was not inhibited, while Cd ion content limited or inhibited growth of some bacterial strains. No significant differences were noted in growth between transformed and untransformed bacteria of a given strain on the medium containing Pb ions. The *BnMT2* transgene presence abolished adverse effects of Cd ions on *Flavobacterium* sp., *Variovorax* sp. and *L. rhizovicina*. Modified bacterial strains were demonstrated for potential use in treatment of soil contaminated with trace metals, especially Cd ions.

Keywords: Plant growth-promoting rhizobacteria (PGPR), transformation, *Brassica napus*, metallothionein, trace elements.