

Growth of streptomycetes in soil and their impact on bioremediation.

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Abstract

The impact of the extremely heavy metal resistant actinomycete *Streptomyces mirabilis* P16B-1 on heavy metal mobilization/stabilization, phytoremediation and stress level of plants was analyzed in the presence and absence of *Sorghum bicolor* in sterile microcosms containing highly metal contaminated or control soil. For control, a metal sensitive *S. lividans* TK24 was used. The metal contents with respect to the mobile and specifically adsorbed fractions of the contaminated soil were considerably decreased by addition of both, living and dead biomass of the strains, with the heavy metal resistant *S. mirabilis* P16B-1 showing considerably higher impact. Both strains could grow in control soil, while only *S. mirabilis* P16B-1 formed new tip growth in the metal contaminated soil. A plant growth promoting effect was visible for *S. mirabilis* P16B-1 in contaminated soil enhancing the dry weight of inoculated *Sorghum* plants. Thus, metal resistant strains like *S. mirabilis* P16B-1 are able to enhance phytoremediation of heavy metal contaminated soils.

Beteiligte Forschungseinheiten

[Biotechnikum Miriam Agler-Rosenbaum](#) [Mehr erfahren](#)

Leibniz-HKI-Autor*innen



Martin Roth

[Details](#)

Themenfelder

[Bioprozessentwicklung](#)

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