

## Potential of *Salvia sclarea* L. for Phytoremediation of Soils Contaminated with Heavy Metals

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**Abstract :** A field study was conducted to evaluate the efficacy of *Salvia sclarea* L. for phytoremediation of contaminated soils. The experiment was performed on an agricultural fields contaminated by the Non-Ferrous-Metal Works near Plovdiv, Bulgaria. The content of heavy metals in different parts of *Salvia sclarea* L. (roots, stems, leaves and inflorescences) was determined by ICP. The essential oil of the *Salvia sclarea* L. was obtained by steam distillation in laboratory conditions and was analyzed for heavy metals and its chemical composition was determined. *Salvia sclarea* L. is a plant which is tolerant to heavy metals and can be grown on contaminated soils. Based on the obtained results and using the most common criteria, *Salvia sclarea* L. can be classified as Pb hyperaccumulator and Cd and Zn accumulators, therefore, this plant has suitable potential for the phytoremediation of heavy metal contaminated soils. Favorable is also the fact that heavy metals do not influence the development of the *Salvia sclarea* L., as well as on the quality and quantity of the essential oil. For clary sage oil obtained from the processing of clary sage grown on highly contaminated soils, its key odour-determining ingredients meet the quality requirements of the European Pharmacopoeia and BS ISO 7609 regarding Bulgarian clary sage oil and/or have values that are close to the limits of these standards. The possibility of further industrial processing will make *Salvia sclarea* L. an economically interesting crop for farmers of phytoextraction technology.

**Keywords :** clary sage, heavy metals, phytoremediation, polluted soils

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