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OPPORTUNITIES FOR NI PHYTOMINING IN SERBIA: EXTRACTION OF NICKEL SALTS FROM THE HYPERACCUMULATING PLANT *ODONTARRHENA MURALIS*

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Phytomining is a technique that aims to obtain metal(oid)s or their products using hyperaccumulating plant species that grow on substrates rich in heavy metals, but not enough to justify conventional mining. After harvesting, the biomass is combusted and the ash is used as bio-ore for the production of pure metal(oid)s or their salts. Most hyperaccumulating plants accumulate Ni, which occurs naturally in high concentrations in ultramafic soils. A large number of Ni hyperaccumulators are found in the genus *Odontarrhena*, which is most commonly used in phytomining studies. In order to obtain the largest amounts of Ni and the salts of the higher purity, it is necessary to choose the most suitable ash processing treatment. This study shows results of obtaining Ni salts from the ash of *Odontarrhena muralis* by hydrometallurgical process in the form of ammonium nickel sulfate hexahydrate, $\text{Ni}(\text{NH}_4)_2(\text{SO}_4)_2 \cdot 6\text{H}_2\text{O}$ - (ANSH). *Odontarrhena muralis* from ultramafic sites at West Serbia accumulates Ni at concentrations of 3300 mg kg⁻¹ and is a good candidate for the phytomining process. By biomass combustion, during which biomass weight decreases for 92.7%, ash was obtained as a suitable raw material for Ni extraction. Out of gained mass of crude ash, 11,71% was yielded as ANSH crystals. The obtained purity of ANSH was 73%, which is slightly lower compared to similar studies, but good enough to show the potential for phytomining application. By optimizing the purification process that precedes precipitation of the ANSH crystals, the purity of recovered crystals can be additionally increased, influencing the economic feasibility of the process. Moreover, by selecting appropriate agronomic measures, it is possible to obtain biomass of *O. muralis* with increased concentration of Ni in aboveground parts, which would increase the initial concentration of Ni in bio-ore that is entering the extraction process.

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