

**Title:** Phytoextraction of radionuclides as the model of radiopharmaceutical residues decontamination

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**Abstract:**

The aim is to demonstrate the possibility of  $^{223}\text{Ra}$  extraction by root system tested plant species *Avena sativa* and *Zea mays* as a model phytoremediation technology and to obtain data to assess the possible entry of residues in food chains. It is also studied the possible effect of additives – complex agents and growth stimulators on uptake and translocation of contaminant from roots to shoot. It was confirmed the addition of additives EDTA, Atonic<sup>®</sup>, Sunagreen<sup>®</sup>, Rexan<sup>®</sup>, Stimulator Z<sup>®</sup>, Racine<sup>®</sup>, Vermaktiv Stimul<sup>®</sup> a Vermaktiv RP affect to uptake and translocation of the  $^{223}\text{Ra}$  in the plant. Addition of stimulators reduces  $^{223}\text{Ra}$  uptake 75% of the starting activity value from 24 to 71% for corn, but simultaneously increases the translocation the contaminant to shoots. The uptake is reduced from original 84% to 20-59% for oats. The uptake isn't affected for the experiments with added Sunagreen<sup>®</sup> and addition of EDTA causes only minimal uptake of studied contaminant. From the results it is evident that uptake of  $^{223}\text{Ra}$  is possible. Commonly used growth regulators increase translocation to shoots and can cause contamination of food chains.