Selective Preconcentration of Lanthanum(III) by *Coriolus versicolor* Immobilized on Amberlite XAD-4

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**Objectives:** *Coriolus versicolor*, as a wood fungus, was immobilized on Amberlite XAD-4 and it was used as solid phase biosorbent for preconcentration of rare earth elements. La(III), Th(IV), U(IV) and Ce(III) were subjected to solid phase extraction (SPE) procedure.

**Materials and Methods:** Different parameters such as pH of solution, flow rate, amount of biosorbent and resin, type and volume of eluent, foreign ions and sample volume which affect to extraction procedure were optimized. 5.0 mL of 1.0 mol L−1 HCl was used to elute the La(III) from column. Concentrations of ions in solutions were determined by inductively coupled plasma - mass spectrometry (ICP-OES).

**Results:** Optimum extraction conditions were obtained using a sample pH of 6.0 for La(III), a sample flow rate of 2.0 mL min⁻¹, 250.0 mg of biosorbent, 1000 mg of XAD-4, and 5.0 ml of 1.0 mol L⁻¹ HCl as the eluent at a flow rate of 2.0 mL min⁻¹. It was observed that La(III) was selectively preconcentrated while other ions remained in solution. The capacities of biosorbent were found as 16.5 mg g⁻¹ for La(III).

**Conclusions:** Accuracy of SPE method was validated through the analysis of certified reference sample of tea (NCS ZC-73014) and spinach (NCS ZC73013). It was observed that founded values agreed with certified ones. Developed method can be applied to real samples to determine the La(III) from aqueous solutions.

**Keywords:** Lanthanum; selective preconcentration; *Coriolus versicolor*; solid phase extraction; rare earth elements