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Cyclohexylamine as extraction solvent and chelating agent in extraction and preconcentration of some heavy metals in aqueous samples based on heat-induced homogeneous liquid-liquid extraction

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ABSTRACT

A new sample preparation method has been developed for extraction and preconcentration of some heavy metal cations in aqueous samples using cyclohexylamine-based homogeneous liquid-liquid microextraction. In the proposed method, cyclohexylamine was used as both the complexing agent and the extraction solvent. For this purpose, cyclohexylamine at µL level was initially added into an aqueous solution containing Co(II), Ni(II), and Cu(II) ions which was placed in a glass test tube. The mixture was shaken for forming a homogeneous solution. Then sodium chloride was added to the solution. After shaking manually again, the test tube was placed in a water bath thermostated at 70°C. Due to lower solubility of cyclohexylamine at the elevated temperature, a cloudy solution was formed. The fine droplets of cyclohexylamine containing cation-cyclohexylamine complexes were collected on the top of the aqueous phase by centrifuging. The enriched analytes in the upper phase were determined by graphite furnace