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Detection of physiological potassium ions level in human serum by Raman scattering
spectroscopy

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Abstract

Potassium ions play pivotal roles in biological systems. A simple and effective Raman scattering-based protocol for the detection of physiological potassium ions level in human serum has been developed. We employed sodium cobaltinitrite, which can react with potassium to form potassium-sodium cobaltinitrite. Combining hydrophobic surface and the Raman scattering for potassium detection, highly reproducible Raman spectra of the potassium-sodium cobaltinitrite can be obtained with highly sensitivity. The characteristic Raman peak of potassium-sodium cobaltinitrite was used to distinguish it from other kinds of matter, and its intensity was used to monitor the amounts of potassium ions in human serum. Because of the contribution of the hydrophobic surface aggregation to the Raman, this protocol has great potential for practical detection of the potassium in human serum and has extended the measuring potential use in the detection of potassium in human serum by spectrum method.

Keywords: potassium, serum, Raman, hydrophobic, potassium-sodium cobaltinitrite

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