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摘要: 利用Cr<sup>3+</sup>对鲁米诺-H<sub>2</sub>O<sub>2</sub>化学发光反应的催化作用, 流动注射化学发光法的优点, 建立测定Cr<sup>3+</sup>的新方法, 并通过H<sub>2</sub>SO<sub>3</sub>的还原作用, 使Cr<sup>6+</sup>还原为Cr<sup>3+</sup>, 从而实现对总铬的测定。确定此方法的最佳条件: 负高压500V; 鲁米诺浓度为 $2.50 \times 10^{-4}$  mol/L; 过氧化氢的浓度为 $4.00 \times 10^{-2}$  mol/L, 鲁米诺溶液的pH为12, 铬(III)试液的pH为5。线性范围为 $1.0 \times 10^{-6}$  mg/mL~ $1.0 \times 10^{-4}$  mg/mL, 检出限(S/N=3)为 $6.60 \times 10^{-7}$  mg/mL, 对浓度为 $6.00 \times 10^{-6}$  mg/mL Cr<sup>3+</sup>的标准溶液进行11次平行测定, 其相对标准偏差为0.6%。该法成功地实现对中药黄芪样品中痕量铬的测定。

关键词: 流动注射, 化学发光, 黄芪, 铬

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[The rapid determination of trace chromium in medicine astragalus by flow injection chemiluminescence method](#)

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Abstract: A new and effective method chemiluminescence-flow injection is established. It is based on the measurement of the light emitted from the Cr<sup>3+</sup>-catalysed oxidation luminol by H<sub>2</sub>O<sub>2</sub>. Cr<sup>6+</sup> is reduced to Cr<sup>3+</sup> by H<sub>2</sub>SO<sub>3</sub>, thus the total chromium ion can be determined. Optimum conditions are obtained: applied voltage is -500V; luminol concentration is  $2.50 \times 10^{-4}$  mol/L; hydrogen peroxide concentration is  $4.00 \times 10^{-2}$  mol/L; pH of luminol is 12, pH of Cr(III) solution is 5. The linear range is  $1.00 \times 10^{-6}$  mg/mL~ $1.0 \times 10^{-4}$  mg/mL and detection limit is  $6.60 \times 10^{-7}$  mg/mL (S/N=3), The relative standard deviation(RSD) is 0.6% for 11 measurements of  $6.00 \times 10^{-6}$  mg/mL Cr<sup>3+</sup> standard solution. The method has been successfully applied to the determination of chromium of the medicine samples Astragalus.

Key words: Flow injection, Chemiluminescence, Astragalus, Chromium

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