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新型双核铜金属配合物中性载体水杨酸根离子电极的研究

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摘要 首次研究了基于N, N'-双[水杨醛缩(2-氨基乙基)]乙二酰胺双核铜

(II)[Cu(II)<sub>2</sub>-AEBS]为中性载体的PVC膜电极。该电极对水杨酸根(Sal<sup>-</sup>)具有优良的电位响应性能和选择性, 并呈现出反Hofmeister选择性行为, 其选择性次序为Sal<sup>-</sup> >

SCN<sup>-</sup> > ClO<sub>4</sub><sup>-</sup> > I<sup>-</sup> > NO<sub>2</sub><sup>-</sup> > Br<sup>-</sup> > NO<sub>3</sub><sup>-</sup>

> Cl<sup>-</sup> > SO<sub>3</sub><sup>2-</sup> > SO<sub>4</sub><sup>2-</sup>。在pH 5.0的磷酸盐缓冲体系中, 电极电位呈现近能斯特响应, 线性响应范围为1.0×10<sup>-1</sup>-5.0×10<sup>-7</sup> mol·L<sup>-1</sup>, 斜率为-55±1mV/pSal<sup>-</sup> (25℃), 检测下限为2.0×10<sup>-7</sup> mol·L<sup>-1</sup>

<sup>1</sup>。采用交流阻抗技术和紫外可见光谱技术研究了电极响应机理。该电极具有响应快、重现性好、检测限低、制备简单等优点。电极可用于阿司匹林药品分析。

关键词 [离子选择性电极, 双核铜金属配合物, 中性载体, 水杨酸根](#)

分类号

**Highly Selective Salicylate Membrane Electrode Based on N,N'-(Aminoethyl)ethylenediamide Bis(2-salicylideneimine) Binuclear Copper(II) Complex as Neutral Carrier**

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**Abstract** A new ion selective electrode for salicylate based on N,N'-(aminoethyl)ethylenediamide bis(2-salicylideneimine) binuclear copper(II) complex [Cu(II)<sub>2</sub>-AEBS] as an ionophore was developed. The electrode has a linear range from 1.0×10<sup>-1</sup> to 5.0×10<sup>-7</sup> mol·L<sup>-1</sup> with a near-Nernstian slope of (-55±1) mV/decade and a detection limit of 2.0×10<sup>-7</sup> mol·L<sup>-1</sup> in phosphate buffer solution of pH 5.0 at 25 °C. It shows good selectivity for Sal<sup>-</sup> and displays anti-Hofmeister selectivity sequence: Sal<sup>-</sup> > SCN<sup>-</sup> > I<sup>-</sup> > Br<sup>-</sup> > Cl<sup>-</sup> > . The proposed sensor based on binuclear copper(II) complex has a fast response time of 5—10 s and can be used for at least 2 months without any major deviation. The response mechanism is discussed in view of the alternating current (AC) impedance technique and the UV-vis spectroscopy technique. The effect of the electrode membrane compositions and the experimental conditions were studied. The electrode has been successfully used for the determination of salicylate ion in drug pharmaceutical preparations.

**Key words** [N, N'-\(aminoethyl\)ethylenediamide bis\(2-salicylideneimine\) binuclear copper\(II\) neutral carrier salicylate ion-selective electrode](#)

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