

Full Papers

青霉素G钾盐对SDS水溶液物理化学性质的影响及其在SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O体系中的释放

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收稿日期 2005-5-16 修回日期 2005-9-22 网络版发布日期 接受日期

摘要 研究了青霉素G钾盐(PenK)对SDS的溶解度、克拉夫点、临界胶束浓度以及SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O体系相行为的影响,

测定了不同温度下SDS/PenK/H<sub>2</sub>O体系的部分相图。利用紫外光谱法研究了PenK在SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O体系中的释放以及PenK在胶束相与水连续相中的分配系数。实验结果表明, PenK的存在使得SDS的临界胶束浓度降低、克拉夫点升高。SDS在水及SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O O/W微乳液中的溶解度降低、而其在W/O微乳液中的溶解度增加。SDS胶束能促进PenK的释放。在SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O O/W微乳液体系, SDS和水含量的增加均提高了PenK的释放速率, *n*-C<sub>5</sub>H<sub>11</sub>OH的存在则抑制了PenK的释放。上述结果与PenK和SDS之间的静电斥力有关。

关键词 [青霉素G钾盐, 十二烷基硫酸钠, 克拉夫温度, 临界胶束浓度, 溶解度, 释放](#)

分类号

**Effect of Penicillin G Potassium Salt on the Physicochemical Properties of SDS Aqueous Solution and the Release of the Salt in SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O System**

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**Abstract** The effects of penicillin potassium salt (PenK) on the solubility, Krafft temperature  $T_K$ , critical micelle concentration CMC of SDS micelle and the phase behavior of SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O system were studied. The partial phase diagrams of SDS/PenK/H<sub>2</sub>O system at different temperatures were determined. The release amounts of PenK in SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O system and the distribution coefficient of PenK between micelle and water were measured by UV-Vis spectroscopy. The results show that in the presence of PenK, the CMC of SDS was decreased while the  $T_K$  of SDS was increased and the solubility of SDS in both water and SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O oil in water (O/W) microemulsion was decreased, but increased in water in oil (W/O) microemulsion. SDS micelles and SDS/*n*-C<sub>5</sub>H<sub>11</sub>OH/H<sub>2</sub>O O/W microemulsion could accelerate the release rate of PenK. The addition of SDS and water could both increase the release rate of PenK, whereas the presence of *n*-C<sub>5</sub>H<sub>11</sub>OH reduced the release rate of PenK. The above results were related to the electrostatic repulsion between PenK and SDS.

**Key words** [penicillin G potassium salt](#) [sodium dodecylsulfate](#) [Krafft temperature](#) [critical micelle concentration](#) [solubility](#) [release](#)

DOI:

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