

论文

聚氧乙烯蓖麻油C-125及吐温80对维生素D₂的增溶与稳定性的研究

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摘要:

维生素D₂的表观饱和溶解度与增溶剂的浓度呈直线关系,聚氧乙烯蓖麻油C-125的增溶效能,约相当吐温80的4倍多。紫外吸收光谱法推测在聚氧乙烯蓖麻油C-125胶团中维生素D₂分子更近于聚氧乙烯基的栅层部位,这可能是使增溶效能不同的1个重要原因。用初均速法测定了维生素D₂的稳定性,在聚氧乙烯蓖麻油C-125溶液中t_{0.9}^{20°}为1294.9 h,在吐温80中为153.5 h,反应活化能测得分别为14.2及9.3 kcal/mol,因而使维生素D₂的稳定性呈现差异。

关键词: 聚氧乙烯蓖麻油 吐温80 维生素D₂ 增溶 稳定性

STUDIES ON THE EFFICIENCIES OF POLYOXYETHYLENE CASTOR OIL C-125 AND TWEEN-80 IN THE SOLUBILIZATION OF CALCIFEROL AND STABILITY OF SOLUBILIZED CALCIFEROL

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Abstract:

A comparison was made between the efficiencies of polyoxyethylene castor oil C-125 and Tween-80 in the solubilization of calciferol. Experimental results showed that there existed a linear relationship between the apparent solubility of calciferol and concentration of the two solubilizers. The solubilization efficiency of polyoxyethylene castor oil C-125 was approximately four times that of Tween-80. Ultraviolet absorption spectrum studies suggested that the solubilized molecules were located nearer to the polyoxyethylene group within the polyoxyethylene castor oil C-125 micelles. This might play an important role in making the differences in the solubilization efficiency. The stabilities of calciferol solubilized in the two solubilization solutions were determined by the initial average rate method, t_{0.9}^{20°} was 1294.9h for the polyoxyethylene castor oil C-125 solution and 153.5h for the Tween-80 solution. It was also found that the energies of activation were 14.2 and 9.3 kcal/mol, respectively. It appears that this might be the cause of the differences in the stability of solubilized calciferol.

Keywords: Tween-80 Calciferol Solubilization Stability Polyoxyethylene castor oil C-125

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