

Tween-80胶束对蒽醌类光敏剂基态和激发态的保护作用

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用Tween-80非离子型胶束增溶竹红菌甲素、乙素(HA、HB)及金丝桃蒽酮(HYP)等蒽醌类光敏剂,发现该胶束对HA的基态和激发态都有保护作用。相对于含水有机体系,HA在胶束中基态的pKa值升高,荧光量子产率增大,光敏反应产生的活性中间体 1O_2 和 $\cdot OH$ 的产额增加,从而提高了其光敏活性,这在光敏损伤作用中具有重要的生物学意义。实验还发现,Tween-80胶束对HB及HYP的保护作用与HA类似,而且保护作用与蒽醌的结构有关,这对筛选光敏剂作为光疗药物具有指导作用。

PROTECTIVE EFFECT OF TWEEN-80 MICELLE ON GROUND AND EXCITED STATES OF PERYLENEQUINONOID PHOTSENSITIZERS

In this work, hypocrellins A and B (HA, HB), and hypericin (HYP) were dispersed in Tween-80 micelle. It was found that the micelle had protective effect on ground state and excited state of HA. Compared with HA in water-contained organic solvents, the pigment in micelle had higher pKa value and higher fluorescence quantum yield. Moreover, the quantum yield of active species produced from photosensitization, 1O_2 and $\cdot OH$, increased as well. As a result, the photosensitivity of HA was enhanced. The protective effect of Tween-80 micelle on HB and HYP was similar to that on HA, and the protective effect was related to the molecular structures of perylenequinonoid photosensitizers. This provided information for screening better photosensitizers for photodynamical therapy.

关键词

Tween-80胶束(Tween-80 micelle); 蒽醌类光敏剂(Perylenequinonoid photosensitizers); 竹红菌素(Hypocrellins); 金丝桃蒽酮(Hypericin); 光敏作用(Photosensitization); 保护作用(Protective effect)