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·科技快讯·

基于卟啉光敏剂中卟啉钠/碱性成纤维细胞生长因子纳米杂合物的智能水凝胶用于多种损伤部位的抗菌光疗及其加速创面愈合作用

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感染是严重烧伤患者中最常见的死亡原因之一。开发多功能生物纳米材料对烧伤感染的综合治疗具有重要意义。作者研制了一种具有抗菌活性和皮肤再生功能的纳米释药系统，用于烧伤的光动力抗菌化疗（PACT）。该处理体系主要将卟啉光敏剂中卟啉钠和聚乳酸-乙醇酸包裹的碱性FGF纳米球包埋在羧甲基壳聚糖-海藻酸钠中形成CSDP杂化水凝胶。该研究系统地评价了CSDP纳米体系的内在抗菌性能、流变性能、荧光成像和生物相容性。在（30 J/cm^2、5 min）温和的光照射条件下，10 μg/mL CSDP表现出优异的抗菌和抗生物膜活性，将其应用于体外几乎根除了99.99%的金黄色葡萄球菌和多重耐药金黄色葡萄球菌。京都基因与基因组百科全书分析显示应用PACT后多重耐药金黄色葡萄球菌多个信号通路发生了改变。在烧伤感染模型中，CSDP-PACT成功地抑制了细菌的生长，同时促进了创面愈合。CSDP水凝胶治疗烧伤创面，多种再生因子增加，促炎性细胞因子减少。这些结果表明，多功能CSDP水凝胶是一种便携式、光触发、抗菌的诊断治疗生物材料，CSDP-PACT提供了一种有前景的策略或基于机械的协同治疗烧伤感染的方法。

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