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用纳米技术诊断与治疗恶性肿瘤的进展

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摘要: 利用纳米技术进行恶性肿瘤早期诊断和治疗是目前国际生物技术领域中最前沿的研究课题, 迄今实验室细胞模型(*in vitro*)研究和临床前动物模型(*in vivo*)研究已取得了重大进展. 纳米生物技术将成为继放疗、化疗和手术治疗后治疗基因疾病的更有效的方法. 纳米生物技术涵盖纳米材料科学, 构成纳米药物载体平台的纳米材料与药物或基因结合的组装技术以及随后与靶向物质结合的组装技术. 目前, 实现了纳米生物传感器在肿瘤细胞上的表达, 纳米基因药物能够抑制肿瘤细胞的增殖、诱导肿瘤细胞凋亡, 但在临床治疗之前为了确保安全、有效, 首先应该研制出针对癌细胞表面配位子特异性更强的靶向物质, 以减少对正常组织的损害; 此外, 还需提高纳米材料药物的装载量和稳定性, 并研制出适宜的纳米材料以及相应的制备技术.

关键字: 纳米生物技术; 恶性肿瘤; 诊断; 治疗; 药物组装; 靶向识别

Nano-technology applied for early diagnose and therapy of malignant tumor

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Abstract: Early diagnose and therapy of malignant processed by nano-technology is at present an advanced research program in the world. Till now some important progresses have been made *in vitro* (cell model) as well as *in vivo* (animal model). It is supposed that nano-biology technology should be a more efficient method following the chemical, radioactive, and surgical operation methods, to deal with tumor. Nano-biology technology includes preparation of nano-particles, construction of nano-drug carriers by assemble and/or combination between nano particles and drugs/gene section, etc. Investigations demonstrated that the above nano-technology could in some degree limit tumor cell proliferation and even induce tumor cell death. However, before the safe and efficient application in clinic, development of targets specifying to receptors on the tumor cell cells is essential to avoid the damage, of normal tissue/organ. Progresses related to loading amount of drugs/gene section and thereby the stability of assemble are expected in the near future.

Key words:nano-biological technology; cancers; diagnosis; cure; drug assemble; targets identification

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