國立臺灣大學技術行銷表

臺大案號: 10A-110323

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技術名稱	胜肽對奈米遞送載體的導向功能
發明人/單位	林文貞、劉佳雯/藥學系(所)
技術內容	本發明之主體是以胜肽配體接合於高分子聚合物上，再以奈米技術製成奈米載體。此奈米載體將藉由胜肽配體將其導向具有高表現之特定受體的癌細胞上，以達到主動標的的目的。
技術成熟度	□量產 □試量產 □雛型 ■ 實驗階段 □概念 □其他
應用方式及預期產品說明	1. 本發明未來可用來包覆和遞送抗癌藥物，應用在癌症治療與診斷上。 2. 本發明可增加奈米載體標的至癌細胞的專一性，增加癌症治療的功效，並降低對正常細胞的毒性。 3. 本發明可應用在製藥生技產業，提供癌症治療時的一種具有專一性的藥物遞送奈米載體。
技術創新度/優點	本發明是利用生物可分解性高分子材料所製備之奈米載體，結合對腫瘤細胞表面的表皮生長因子受體(epidermal growth factor receptor; EGFR)具有專一性的胜肽配體，達到對腫瘤細胞表面 EGFR 進行主動標的的目的。 技術創新性及優點包括: **胜肽標的配體的新穎性與相較於抗體配體的優勢** 1. 此胜肽尚未被使用作為導向癌細胞特定受體的配體功能; 2. 對癌細胞特定受體具有專一結合能力; 3. 胜肽配體可避開抗體配體的缺點; 4. 胜肽片段可以利用化學合成方法得到，因此批次之間的品質穩定; 5. 具有低免疫性; 6. 不需有立體結構即具有標的癌細胞的能力; **奈米遞輸載體主體的優點** 1. 使用生醫可用之生分解性的兩性高分子聚合物; 2. 奈米大小之載體可進入細胞內; 3. 可延長藥物及奈米載體在體內血液循環的時間; 4. 具有 EPR 特性(enhanced permeability and retention effect，可將藥物載體以被動標的方式聚集在腫瘤細胞內; **胜肽配體奈米遞輸載體的整體特色** 1. 可主動標的至癌細胞; 2. 並經由受體胞飲作用(receptor-mediated endocytosis) 進入癌細胞內; 3. 未來應用在癌症治療時，可增加治療效果，並降低對正常細胞的毒性; 4. 具有未來應用在生技醫藥市場的潛力。
智慧財產權	專利申請中

Marketing Abstract of NTU's Invention Disclosure

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Development Stage	☐Production ☐Trial production ☐Prototype ■ Lab scale ☐Idea ☐Others:
Fields of Application	1. This invention can be used to encapsulate and de1iver anticancer drugs for cancer therapy and diagnosis. 2. This invention possesses active targeting specificity to cancer cells, and increases therapeutic efficacy and reduces toxicity to normal cells. 3. This invention can be applied in biotechnical and pharmaceutical industry for cancer treatment.
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Advantages	The advantages and strength of this invention when compared to the existing technologies are addressed as follows. **Noveltv of peptide Ligand** 1. It has not been used as an active targeting ligand for nano-carriers. 2. It possesses specific binding affinity to over-expressed receptor. 3. Peptide ligand can overcome the antibody's limitations. 4. Peptide fragments can be synthesized by chemical methods and its quality is stable from batch to batch. 5. Peptides are low immunogenicity. 6. Peptides are capable of targeting and internalization into tumor cells

	without 3D structure required. **Advantage of polvmeric nano-carriers** 1. It is biocompatible, biodegradable, and amphiphilic copolymer. 2. It can be enter cells due to nano size. 3. It prolongs circulation time in bloodsteam *in vivo*. 4. It preferentially localizes in the tumors as a result of the enhanced permeation and retention (EPR) effect arising from leaky vasculature of the tumors and the impaired lymphatic drainage. **Advantage of peptide ligand conjugated polvmeric nano-carriers** 1. It possesses active targeting potential to cancer cells 2. It can enter cancer cells via receptor-mediated endocytosis. 3. It can be applied in cancer therapy with better efficacy and reduced toxicity. 4. It can be applied in biotechnical and pharmaceutical industry for cancer therapy.
IP Right(s)	Patent pending
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