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iRGD, a tumor-penetrating peptide for tumor-specific drug delivery

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Delivering cancer drugs specifically to tumors and deep into tumor tissue against the high interstitial pressure is a major hurdle in cancer therapy. The iRGD drug delivery system may provide a solution. The iRGD peptide (CRGDK/RGPD/EC) was identified by phage display against metastatic prostate cancers. iRGD carries a tumor-specific RGD motif, which recognizes av integrins that are highly expressed on tumor vasculature and tumor cells, and an RXXK/R CendR motif, which binds to a tissue-penetration receptor neuropilin-1. Importantly, the tissue penetration pathway involves an energy-dependent active transport system, which relies on a mechanism similar to macropinocytosis. This unique property allows iRGD to accomplish tumor-penetrating delivery of drugs by simple co-administration. Thus, the therapeutic index of various drugs can be enhanced without any chemical modification of the drugs. In fact, iRGD enhanced tumor-specific accumulation and anti-tumor effects of various types of systemic drugs including small chemicals, nanodrugs, and antibodies in a number of tumor types. Our recent studies have revealed that iRGD alone has anti-metastatic effects when delivered intravenously, providing an additional benefit of using the iRGD system for cancer therapy. In addition, the iRGD co-administration system is effective not only for systemic cancer therapy, but also for intraperitoneal chemotherapy for peritoneal carcinomatosis. In this presentation.a brief overview and recent advances of the iRGD system will be discussed.

Biography

Tatiana Hurtado de Mendoza completed her Bachelor's degree in Biochemistry and Molecular Biology at Universidad Autonoma de Madrid, Spain and then moved to San Diego to pursue a PhD in Biology from UCSD/Salk Institute. Currently, she is a Post-doctoral fellow at Sanford Burnham Prebys Medical Discovery Institute.

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