

## Immunoliposomes Conjugated with CD133 Antibody for Targeting Melanoma Cancer Stem Cells

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**Abstract :** Cancer stem cells (CSCs) represent a subpopulation of cancer cells that possess the characteristics associated with normal stem cells. CD133 is a phenotype of melanoma CSCs responsible for melanoma metastasis and drug resistance. Although adriamycin (ADR) is commonly used drug in melanoma therapy, but it is ineffective in the treatment of melanoma CSCs. In this study, we constructed CD133 antibody conjugated ADR immunoliposomes (ADR-Lip-CD133) to target CD133+ melanoma CSCs. The results showed that the immunoliposomes possessed a small particle size (~150 nm), high drug encapsulation efficiency (~90%). After 72 hr treatment on the WM266-4 melanoma tumorspheres, the IC50 values of the drug formulated in ADR-Lip-CD133, ADR-Lip (ADR liposomes) and ADR are found to be 24.42, 57.13 and 59.98 ng/ml respectively, suggesting that ADR-Lip-CD133 was more effective than ADR-Lip and ADR. Significantly, ADR-Lip-CD133 could almost completely abolish the tumorigenic ability of WM266-4 tumorspheres in vivo, and showed the best therapeutic effect in WM266-4 melanoma xenograft mice. It is noteworthy that ADR-Lip-CD133 could selectively kill CD133+ melanoma CSCs of WM266-4 cells both in vitro and in vivo. ADR-Lip-CD133 represent a potential approach in targeting and killing CD133+ melanoma CSCs.

**Keywords :** cancer stem cells, melanoma, immunoliposomes, CD133

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