Search for MICA Expression Controlling miRNA in A549 Lung Cancer Cells

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Cancer cells express surface proteins when they are formed, and among the proteins is MICA. MICA is recognized by human immune system such as NK cell, and NK cells secrete cytokines to remove cancer cells. Unfortunately, cancer cells decrease their MICA expression levels to avoid cytotoxic attacks from NK cells. This mechanism is hypothesized to be facilitated by miRNA. However, the list of miRNAs involved in this mechanism is yet to be completed. In this study, we aim to determine the miRNAs involved in the MICA downregulating mechanism, especially in A549 lung cancer cells. When Bortezomib, a proteasome inhibitor, was treated to A549 cells in previous study, western blot result showed that MICA expression level was not altered, indicating that proteasome is not involved in regulating MICA expression. Drugs that induce MICA were treated to A549 cells, and a real-time PCR analysis revealed that miR-93, miR-96, miR-183, and miR-214 are noticeably related with MICA expression in A549 cells. Precursor miR-96 was transfected into A549 cells, and the western blot results confirmed that MICA protein expression is downregulated with increase in miR-96 in A549 cells. Thus, this study concludes that miR-96 regulates MICA expression in A549 cells. This finding provides a potential of miR-96's medical use to treat adenocarcinoma cancer. In addition, this study provides the first insight into miRNAs that regulate MICA protein in A549 cells.