AlmoR1

EGFR-Mutant Non-Small-Cell Lung Cancer has a high rate of brain metastases, and Epidermal growth factor receptor tyrosine kinase inhibitors (TKIs) are the principal therapeutic approach. However, acquired targeted therapy resistance is the main reason for EGFR-TKIs' treatment failure. At present, the mechanism of intracranial acquired targeted therapy resistance is limited, mainly due to the lack of a cell line that can be used for its study.

A brain parenchymal metastatic sample that progressed after third-generation EGFR-TKI treatment was used to establish a cell line named AlmoR1. The genetic characteristics of the cell line were evaluated by short tandem repeat (STR) profiling and whole-exome sequencing analysis. The phenotypic characteristics were characterized by CCK8, western blot, HE staining, immunohistochemistry (IHC), and an orthotopic brain tumor model.

Results: The cell line we successfully established, AlmoR1, can be passed in vitro stably. STR analysis revealed it was a novel NSCLC BM cell line. It harbors the EGFR E746_A750del (ex19del) mutation, and the IC50 to almonertinib and osimertinib of AlmoR1 was significantly higher than that of sensitive cells. In our orthotopic brain tumor model construction with AlmoR1 cells, 75% (3/4) tumor formation can be observed in the living system.

Conclusions: These data suggest that the established cell line, AlmoR1, preserved the resistance to broad third-generation EGFR-TKIs and good tumorigenicity in an intracranial orthotopic model, so that it can serve as a new tool to elucidate the pathogenesis, explore new treatment methods, and conduct the development of new drugs for targeted therapy resistance of brain metastases [1)]

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Wu J, Wu X, Wang J, Feng G, Wang Y, Chen Z, Wang W, Wang R. Establishment and Characterization of a Brain Parenchymal Metastatic Cell Line AlmoR1 Derived From an NSCLC Patient With EGFR-TKI Resistance. Cancer Med. 2025 Apr;14(7):e70827. doi: 10.1002/cam4.70827. PMID: 40172035.