

عنوان مقاله:

Epigenetics changes affecting L-asparaginase therapy in human leukemia: a mini review

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خلاصه مقاله:

ASNase (L-asparaginase), as an effective anticancer component, is used in chemotherapy and treatment of ALL (acute lymphoblastic leukemia) and natural killer (NK)/T-cell lymphoma. In contrary to significant efficiency of ASNase hypersensitivity or allergy is the most common asparaginase-associated toxicities in treatment of pediatric and adult, which leads termination of ASNase therapy in ALL patients. Additionally, resistance to treatment is another obstacle in ASNase therapy, which consequently ALL relapse is occurred in result of leukemic cells resistance to treatment. A reciprocal correlation between asparagine synthetase (ASNS) expression and sensitivity to ASNase treatment is reported in ALL cells, that ASNS levels may deactivate the ASNase therapy effects. Epigenetic changes besides genomic modulation, gene expression profiling alterations and genetic polymorphism have an effective role in ASNS expression and cellular resistance to ASNase consequently. Recent studies have shown DNA hypermethylation in ASNS promoter, which named as 'silent inactivation', prevents it's transcriptional expression following asparagine depletion. So, epigenetic modifications influence chemotherapy response in ALL patients and have an impressive role in achieving new therapeutic approaches. In this review we focused on the known epigenetic changes in ASNS expression in ALL cells and also prospect to the epigenetic efficacy such as demethylating agents to combined .treatment that could modulate the sensitivity and resistance to ASNase therapy in ALL patients

کلمات کلیدی:

Asparaginase, Acute Lymphoblastic Leukemia, hypersensitivity, resistance to treatment, DNA Methylation, asparagine synthetase

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