

عنوان مقاله:

Bioinformatic Analysis of L-Asparaginase II from *Citrobacter Freundii* ۱۱۰۱, *Erwinia Chrysanthemi* DSM ۴۶۱۰, *E. coli* BL۲۱ and *Klebsiella Pneumoniae* ATCC ۱۰۰۳۱

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خلاصه مقاله:

Background and Aims: L-Asparaginase II is a cornerstone of treatment protocols for acute lymphoblastic leukemia. Only asparaginase II obtained from *E. coli* K1۲ and *Erwinia chrysanthemi* have been used in human as therapeutic drug. The therapeutic effects of asparaginase II from *E. coli* K1۲ and *Erwinia chrysanthemi* is accompanied by side effects. It is desirable to search for other asparaginase II sources with novel properties that could be therapeutic and produce an enzyme with less adverse effects. **Materials and Methods:** Previously, we performed the in vitro studies, including cloning, sequencing and expression of L-asparaginase II genes (ansB) from *Citrobacter freundii* ۱۱۰۱, *Erwinia chrysanthemi* DSM ۴۶۱۰, *E. coli* BL۲۱ and *Klebsiella pneumoniae* ATCC ۱۰۰۳۱. In this article, the obtained results were compared bioinformatically. The nucleotide and amino acid sequence alignments were carried out by ClustalW۲. Protein localization and signal peptides were predicted by PSORT and SIG-Pred softwares, respectively. Percentages of hydrophobic and hydrophilic residues were calculated by Genscript software. The physicochemical parameters were computed using ExPASy's ProtParam prediction server. The secondary and ۳D structures were predicted by SOPMA and the online server Phyre۲, respectively. The antigenicity of the asparaginase IIs was predicted using Semi-empirical method. **Results:** *E. coli* BL۲۱ and *Citrobacter freundii* ۱۱۰۱ had the most similarity in physicochemical parameters and antigenicity with *E. coli* K1۲. Also, *Erwinia chrysanthemi* DSM ۴۶۱۰ had the most similarity in physicochemical parameters and antigenicity with *Erwinia chrysanthemi*. **Conclusions:** In spite of these similarities with drug types, the potentiality of other low-similar asparaginase IIs should also be determined and compared with drug types.

کلمات کلیدی:

Asparaginase, Bioinformatic, *Citrobacter freundii*, *E. coli*, *Erwinia chrysanthemi*, *Klebsiella pneumoniae*

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