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# Asparaginase

National Cancer Institute

## Source

National Cancer Institute. *Asparaginase*. NCI Thesaurus. Code C286.

An enzyme isolated from the bacterium *Escherichia coli* or the bacterium *Erwinia carotovora* with antileukemic activity. Asparaginase hydrolyzes L-asparagine to L-aspartic acid and ammonia in leukemic cells, resulting in the depletion of asparagine, inhibition of protein synthesis, cell cycle arrest in the G1 phase, and apoptosis in susceptible leukemic cell populations. Asparagine is critical to protein synthesis in leukemic cells; some leukemic cells cannot synthesize this amino acid de novo due to the absent or deficient expression of the enzyme asparagine synthase. The *E. carotovora*-derived form of asparaginase is typically reserved for cases of asparaginase hypersensitivity.