SUPPRESSION OF RAUSCHER VIRUS-INDUCED MURINE LEUKEMIA BY L-ASPARAGINASE

BY

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SUMMARY

Murine leukemia induced by Rauscher leukemia virus (RLV) was responsive to treatment with L-asparaginase from E. coli. Five I.U., administered every third day, inhibited the development of splenomegaly and prolonged survival of RLV-infected mice. Examination of spleen sections revealed that L-asparaginase treatment inhibited development of malignancy, but did not completely inhibit hyperplasia of cells in the lymph follicles.

Fifteen I.U. of L-asparaginase, administered one hour before RLV inoculation, did not prevent the development of leukemia. After 7 days, two L-asparaginase treatments did not prevent production of spleen foci. Spleen foci represent areas of primary leukemic transformation by RLV. L-asparaginase treatment exhibited very limited antiviral activity. Since L-asparaginase treatment did not prevent leukemic transformation or RLV replication, the antileukemic effect was apparently directed against the proliferating leukemic cells.

In contradiction to the L-asparagine deprivation hypothesis, first proposed by Broome (1961, 1963b), was our observation that RLV-induced leukemia was suppressed by treatment with L-asparagine. Attempts to grow mouse cells in culture were not successful; thus, the requirement for exogenous L-asparagine could not be determined. Studies to determine the L-asparaginase activity and L-asparagine content of normal and leukemic spleens were unsuccessful.

Since the L-asparaginase antileukemic activity was exerted independently of an inhibition of viremia, the role of RLV replication in leukemogenesis was re-evaluated.