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1: Immunol Lett. 2002 Jul 3;82(3):171-82.

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Modulatory role of thymosin-alpha-1 in normal bone-marrow haematopoiesis and its effect on myelosuppression in T-cell lymphoma bearing mice.

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In continuation with the earlier and ongoing studies on Thymosin-alpha-1 (Talpha1) exerting its immunomodulatory effects on various components of the immune system including T-cells, NK-cells, blood lymphocytes and macrophages, the role of Talpha1 in normal bone-marrow haematopoiesis has been investigated in the present study. The haematopoietic alterations associated with the growth of murine T-cell lymphoma, Dalton's Lymphoma (DL) and subsequently its restoration by Talpha1 was also investigated. It is observed that the non-adherent bone-marrow cells from normal mice (N-BMCs) exhibited enhanced proliferation on in vitro treatment with Talpha1 (dose range of 1-100 ng/ml) with maximal response at 100 ng/ml of Talpha1. In vitro stimulation with 100 ng/ml of Talpha1 also resulted in increased myeloid colony formation, as manifested by the rise in total number of colonies, frequency of the individual colony types and their size. This response was further upregulated in the presence of various colony stimulating factors (CSFs) like MCSF, GMCSF, GCSF and IL-3. Similarly, in vivo administration of Talpha1 (a single intraperitoneal injection of 10 microg per mouse) to normal mice also resulted in enhanced proliferation and colony formation by BMCs as compared with BMCs obtained from untreated mice. On the contrary, the progressive growth of T-cell lymphoma in mice led to suppressed myelogenesis, with marked reduction in the total colony numbers and their size. The BMCs from DL-bearing mice (DL-BMCs) displayed a preferential lineage-restricted differentiation towards the granulocytic-type colonies with maximum numbers of CFU-Gs and CFU-GMs, followed by CFU-Ms. However, incubation of DL-BMCs with 100 ng/ml of Talpha1, in vitro restored their suppressed proliferation and colony forming ability (CFA) with significantly enhanced total number of colonies and individual colony types, which further increased in the presence of CSFs. In vivo studies with BMCs from DL-bearing mice treated with single intraperitoneal injection of 10 microg Talpha1/mouse also resulted in significant enhancement in their proliferative as well as colony forming ability in comparison to that of untreated DL-mice. The present observations suggest that Talpha1 can positively modulate the haematopoietic functions of normal murine BMCs, in addition to its myelo-restorative role in tumour-bearing mice showing suppressed myelopoiesis.

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