Pharmacological Reports
2011, 63, 1481–1490
ISSN 1734-1140

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Polish Academy of Sciences

Effects of bestatin on phagocytic cells in cyclophosphamide-treated mice

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Abstract:
The low-molecular weight dipeptide bestatin is a potent inhibitor of aminopeptidase N and has been demonstrated to have antitumor and immunomodulatory effects. The effects of bestatin on interleukin (IL)-1β synthesis and release by peritoneal macrophages stimulated *in vitro* with lipopolysaccharide (LPS) from *E. coli,* the phagocytic and oxidative burst activity from peripheral blood monocytes and granulocytes and the number of blood leukocytes and blood picture in cyclophosphamide-treated mice were tested. Bestatin at doses of 1 and 0.1 mg/kg was injected into cyclophosphamide-treated mice *ip* five times on alternating days or ten times at 24 h intervals. The first dose of bestatin was administered 24 h after a single injection of cyclophosphamide at a dose of 350 mg/kg. It was found that bestatin administered at doses of 1 and 0.1 mg/kg five times on alternating days increased the synthesis and release of IL-1β by resident peritoneal murine macrophages stimulated *in vitro* with LPS in cyclophosphamide-treated mice. The immunocorrecting action of bestatin on the picture of peripheral blood in cyclophosphamide-treated mice was primarily observed with young forms of neutrophilic granulocytes. The changes were observed irrespective of the dosage and the number of subsequent doses applied. Moreover, the administration of bestatin after pharmacological immunosuppression partially prevented the suppressive effects of cyclophosphamide on the oxidative burst activity of peripheral blood monocytes and stimulated the phagocytic activity of granulocytes.

Key words:
bestatin, cyclophosphamide, phagocytosis, oxidative burst, IL-1β, mice