Thrombopoietin

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Abstrak

Thrombopoietin is synthesized in hepatocytes and She kidney. After it enters the blood stream, thrombopoetin is transported to the bone marrow. The receptor for thrombopoietin is known as c-mpl, which is expressed on the surface of platelets, megakaryocytes and Pltiripotent Stem Cells (PSCs). The function of ihrombopoietin is as a regulator of Colony Forming Unit (CFU)-Meg proliferation and as a stimulator for megakaryocyte maturation and platelet production. The plasma concentration ofthmmbopoietin is regulated by the platelet number. During thrombocytopenia, the plasma concentration of thrombopoietin is increased, and the platelet production is stimulated. On the other hand, during thrombncytosis, a large number of platelets will remove thrombopoietin from the circulation and the plasma concentration of thrombopoietin will decrease. The clinical application of thrombopoietin is to stimulate the number of platelets in thromhocytopenia induced by chemotherapy. Two forms of recomhinunl thrombopoietin have been developed for clinical use, i.e.: recombinanl Human Mcgakaryocyte Growth and Development Factor (rHuMGDF) and Polythylene Glycol (PEG)-rHuMGDF. Administration of rHuMGDF is preferred to PEG-rHuMGDF, because the later can stimulate an antibody reaction. In addition, thrombopoietin is also required for the maintenance of PSC, stimulation of PSC proliferation, and mobilization of PSCto peripheral tissues. The concentration of thrombopoietin can be determined by a highly sensitive enzyme-linked immunosorbent assay using a monoclonal antibody. Under normal conditions, the plasma concentration of thrombopoietin ranges from 12 pg/mL to 61 pg/mL.