Endothelial progenitor cells (EPCs) therapy represents a novel strategy for a variety of diseases. Interestingly, spleen acts an important reservoir during EPCs trafficking. Therefore, the authors aim to investigate the involvement of SDF-1/CXCR4 in EPCs settlement in the spleen. EPCs were cultured and characterised as previous described methods. Then, 1×10^6 EPCs were labelled with Dil-acLDL and intravenously infused into C57/BL6 mice. Immunohistochemical staining showed homing of
transplanted EPCs in spleen 24 h later, indicating recruitment of transplanted EPCs in spleen. Physiological distribution of EPCs in different organs was evaluated by fluorescence-activated cell sorting (FACS) analysis of Sca-1/Flk-1 positive cells, which demonstrated physiological settlement of EPCs in spleen. Removal of splenic niche by splenectomy augmented circulating EPCs 12 and 24 h later, indicating an important role of spleen on modulation of EPCs circulating dynamics. To determine the involvement of SDF-1/CXCR4 in EPCs migration and homing, expression of SDF-1 in spleen and CXCR4 in EPCs were revealed by ELISA and RT-PCR. Modified Boyden chamber assay disclosed that SDF-1 (10.100 ng/ml) induced EPCs migration in vitro. Injection of SDF-1 protein into spleen increased the number of splenic EPCs, while local administration of SDF-1 antibody or block of SDF-1/CXCR4 axis with AMD3100 attenuated their migration and settlement. These results indicate that the SDF-1/CXCR4 axis is involved in recruitment of EPCs to the spleen which will deepen our understanding on EPCs circulating kinetics.