New functions for dermatan sulfate: anti-inflammatory response and influence in migration of mononuclear cells differentiated or not into endothelial progenitor cells (EPC)

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Dermatan sulfate (DS) is a glycosaminoglycan that can be involved in the attraction, migration and differentiation of cells in the injured endothelium. EPC can be originated in bone marrow (BM) and migrate to the vessel wall after lesion in order to help recover the endothelium. In this work, we analyzed the effect of DS in inflammation and migration of MNC differentiated (cMNC) or not (MNC) to EPC, injected in mice after mechanical carotid artery injury. DS [20mg/kg] was injected after surgery. 7 days after injury we analyzed 4 groups: MNC (1), cMNC (2), MNC + DS (3) and MNCc + DS (4). The number of MNCs was higher in DS treated animals when compared to the others. The number of cMNC did not differ. The inflammatory response (expression of ICAM-1, eNOS, P-selectin and SDF-1) and ELISA (TGF-β and IL-6), was analyzed 1 day after lesion. We studied: Injured (A), Injured + DS (B), Injured + MNC (C) and not injured (D). TGF-β levels decreased in MNC injected animals; the levels of IL-6 did not differ among groups. Expression of ICAM-1, P-selectin and SDF-1 decreased significantly after DS injection. Injection of cMNC increased the expression of ICAM-1 and eNOS. We suggest that DS therapy promoted migration of MNC to lesion site and decreased the expression of proteins involved in inflammation, creating a more favorable environment for these cells adhesion.

Keywords: Dermatan sulfate, arterial lesion, endothelial progenitor cells