Neutrophil Gelatinase-Associated Lipocalin from immune cells is mandatory for aldosterone-induced cardiac remodeling and inflammation

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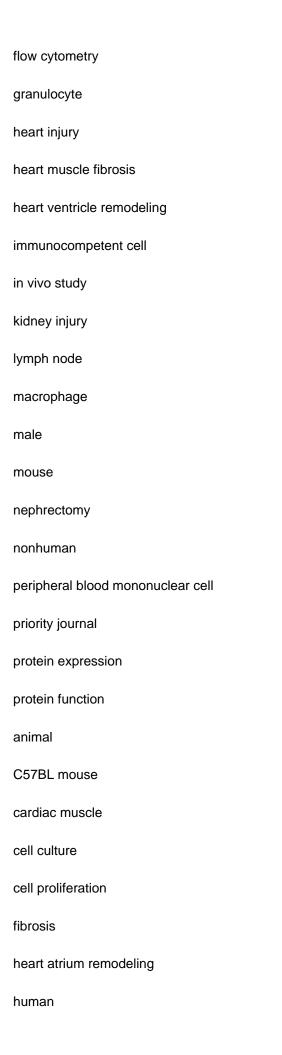
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Immune system activation is involved in cardiovascular (CV) inflammation and fibrosis, following activation of the mineralocorticoid receptor (MR). We previously showed that Neutrophil Gelatinase-Associated Lipocalin (NGAL) is a novel target of MR signaling in CV tissue and plays a critical role in aldosterone/MR-dependent hypertension and fibrosis. We hypothesized that the production of NGAL by immune cells may play an important part in the mediation of these deleterious mineralocorticoid-induced effects. We analyzed the effect of aldosterone on immune cell recruitment and NGAL expression in vivo. We then studied the role of NGAL produced by immune cells in aldosterone-mediated cardiac inflammation and remodeling using mice depleted for NGAL in their immune cells by bone marrow transplantation and subjected to mineralocorticoid challenge NAS (Nephrectomy, Aldosterone 200 ?g/kg/day, Salt 1%). NAS treatment induced the recruitment of various immune cell populations to lymph nodes (granulocytes, B lymphocytes, activated CD8 + T lymphocytes) and the induction of NGAL expression in macrophages, dendritic cells, and PBMCs. Mice depleted for NGAL in their immune cells were protected against NAS-induced cardiac remodeling and inflammation. We conclude that NGAL produced by immune cells plays a pivotal

of NGAL in cardiac damages, besides its relevance as a biomarker of renal injury. © 2017 Aldosterone Cardiovascular **Fibrosis** Inflammation MR**NGAL** aldosterone mineralocorticoid neutrophil gelatinase associated lipocalin aldosterone neutrophil gelatinase associated lipocalin animal cell animal experiment animal model animal tissue Article B lymphocyte bone marrow transplantation carditis CD8+ T lymphocyte cell selection controlled study dendritic cell fibroblast

role in cardiac damage under mineralocorticoid excess. Our data further stressed a pathogenic role



inflammation
knockout mouse
leukocyte
metabolism
oxidative stress
pathology
Aldosterone
Animals
Atrial Remodeling
Cell Proliferation
Cells, Cultured
Fibroblasts
Fibrosis
Humans
Inflammation
Leukocytes
Lipocalin-2
Male
Mice, Inbred C57BL
Mice, Knockout
Myocardium
Nephrectomy
Oxidative Stress