Assessment of TNF production by peritoneal macrophage from C57BL/6-RAGE-KO mice: The effect of streptozotocin (STZ)-induced diabetic neuropathic pain and stimulation of adrenergic receptors.

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ABSTRACT

Objective: To examine the effect of diabetic neuropathy induced by STZ on TNF production by peritoneal macrophages and to determine whether adrenergic receptor activation can enhance TNF production from diabetic macrophages.

Methods: Male and female C57BL/6 wild type and C57BL/6-RAGE-KO mice were administered streptozotocin (STZ) to induce chronic diabetic neuropathy. Blood glucose levels were measured at 65 days post-STZ injection. Macrophages were isolated from peritoneal cavities of diabetic and non-diabetic mice, and TNF production was measured in response to LPS stimulation in the presence or absence of various adrenergic agonists and antagonists.

Results: TNF production in diabetic mice was significantly reduced compared to non-diabetic controls. Adrenergic agonists and antagonists had differential effects on TNF production from diabetic and non-diabetic macrophages, with alpha-2 adrenergic receptor agonists and ligands increasing TNF production, while alpha-1 adrenergic receptor agonists and antagonists had no significant effect.

Conclusions: Diabetic neuropathy reduces TNF production by peritoneal macrophages, and adrenergic receptor activation can modulate this response. These findings suggest potential therapeutic targets for improving TNF production in diabetic neuropathy.

Keywords: TNF, diabetic neuropathy, adrenergic receptors, macrophages.