

Thymoquinone (IL-17A Inhibitor)

Catalog No.: NBP2-26241

Description: Solid Powder; molecular weight 164.20

Storage: The powder form of the inhibitor is stable in the desiccator at -20oC for 1 year. DMSO-reconstituted inhibitor solution is stable for up to two months at -20oC.

Background:

Thymoquinone is an active ingredient extracted from *Nigella sativa*. Thymoquinone has been known for its potent biological activities including anti-oxidant, anti-inflammatory, and anti-tumor activities (1, 2). Thymoquinone suppresses NF- κ B-dependent antiapoptotic gene products in various cancer cells, and abrogates the progression of prostate cancer cells from G1 to S phase (1). Molecular targets of thymoquinone also include up-regulation of p21 and p27, and down-regulation of androgen receptor and elongation 2 factor-1 (E2F-1) (1). Thymoquinone also inhibited production of key proinflammatory cytokines that induce the pathogenesis of allergic inflammation such as IL-5 and IL-13 (3). In our study, thymoquinone suppressed induction of the proinflammatory IL-17A cytokine, in which constitutive activation of the IL-17A promoter in the IL-17A Prom/LUCPorter™ HEK 293 cell line (Novus, NBP2-26283) was highly inhibited by thymoquinone with the IC₅₀ of 19.16 μ M (Figure 1). Furthermore, thymoquinone suppresses IL-17A production in peripheral blood mononuclear cells stimulated with anti-CD3/CD28 (Figure 2).

Preparation:

Note: Please read the entire data sheet before using this product.

1. To make 100 mM stock solution, dissolve 10 mgs of inhibitor in 610 μ l anhydrous dimethyl sulfoxide (DMSO) by gentle vortex.
2. Divide into useable aliquots and store them at -20oC.
3. The stock inhibitor solution may be diluted further to make working solutions in DMSO. The final DMSO concentration in the cells to be analyzed should not exceed 1%.

Usage:

The IL-17A Prom/LUCPorter™ cell line (NBP2-26283), which is a semi-constitutively active cell line, is a useful positive control model system for studying inhibition of IL-17A induction by thymoquinone (Figure 1). The anti-CD3/CD28-stimulated peripheral blood mononuclear cells (PBMC) are another model system for studying inhibition of IL-17A production (Figure 2).

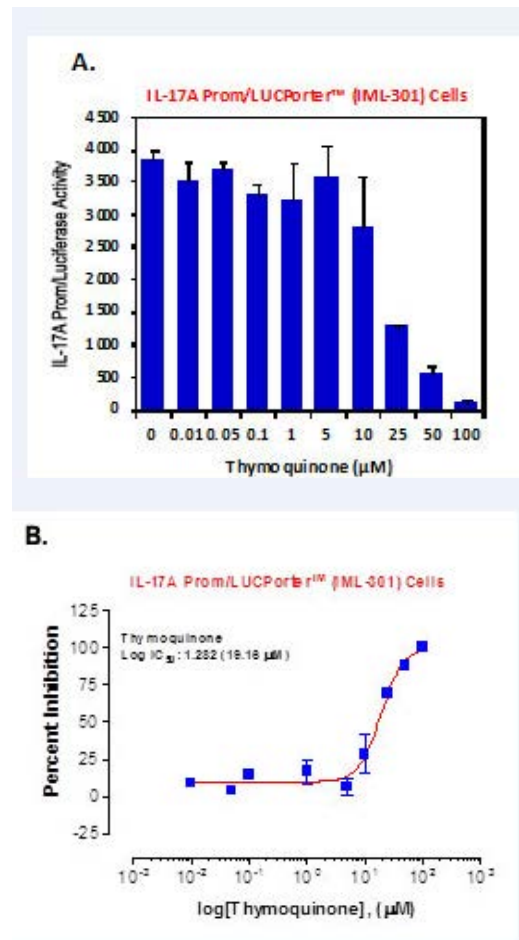


Figure 1. Evaluation of inhibitory activity of thymoquinone on induction of IL-17A. IL-17A Prom/LUCPorter™ HEK 293 (NBP2-26283) cells were plated in 96-well white plates at 5×10^4 cells/well for 16 h. Cells were treated with different concentrations of thymoquinone between 0 and 100 μ M as noted [A] for 6 h. The luciferase reporter assay reagent (LS010) was then directly added to the cell plates (50 μ l/well). After 10 min, the plates were analyzed by reading in a plate luminometer. The values from [A] were used to determine the IC₅₀ of thymoquinone [B]

Data Summary: Thymoquinone inhibited the IL-17A promoter induction in a dose-response manner, of which IC₅₀ was measured as 19.16 μ M.

Research purposes only. Not for diagnostic use.

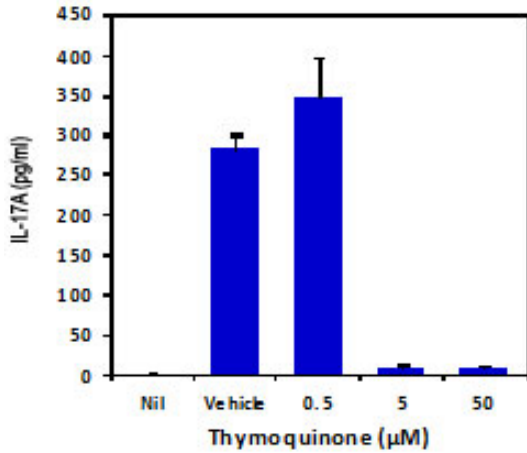


Figure 2. Thymoquinone suppresses IL-17A production in human PBMC stimulated with anti-CD3/CD28. Peripheral blood mononuclear cells (PBMC) were stimulated with anti-CD3/CD28 in the presence or absence of inhibitor (0.5, 5 and 50 μM) for 3 days. IL-17A was then measured from the cell culture media using the Human IL-17A ActivELISA™ (NBP2-31046).

Data Summary: PBMCs that were stimulated with anti-CD3/CD28 produced IL-17A, of which induction was inhibited by thymoquinone. Vehicle: DMSO, Nil: no anti-CD3/CD28 stimulated PBMCs.

Product Citations:

1. Gupta, S. C. et al. (2010). Regulation of survival, proliferation, invasion, angiogenesis, and metastasis of tumor cells through modulation of inflammatory pathways by nutraceuticals. *Cancer Metastasis Rev.* 29, 405-434.
2. Woo, C. C. et al. (2012). Thymoquinone: Potential cure for inflammatory disorders and cancer. *Biochem. Pharmacol.* 83, 443-451.
3. El Gazzar, M. A. (2007). Thymoquinone suppresses in vitro production of IL-5 and IL-13 by mast cells in response to lipopolysaccharide stimulation. *Inflamm. res.* 56, 345-351.

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