

DESCRIPTION

Species Reactivity	Rat
Specificity	Detects rat IL-4 in ELISAs and Western blots. In sandwich immunoassays, less than 0.05% cross-reactivity with recombinant mouse IL-4 and recombinant human IL-4 is observed.
Source	Polyclonal Goat IgG
Purification	Antigen Affinity-purified
Immunogen	<i>E. coli</i> -derived recombinant rat IL-4 Cys25-Ser147 Accession # P20096
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with BSA as a carrier protein. See Certificate of Analysis for details.

APPLICATIONS

Please Note: Optimal dilutions should be determined by each laboratory for each application. *General Protocols* are available in the *Technical Information* section on our website.

	Recommended Concentration	Sample
Western Blot	0.1 µg/mL	Recombinant Rat IL-4 (Catalog # 504-RL)
Rat IL-4 Sandwich Immunoassay		Reagent
ELISA Capture	2-8 µg/mL	Rat IL-4 Antibody (Catalog # MAB504)
ELISA Detection	0.1-0.4 µg/mL	Rat IL-4 Biotinylated Antibody (Catalog # BAF504)
Standard		Recombinant Rat IL-4 (Catalog # 504-RL)

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 0.2 mg/mL in sterile PBS.
Shipping	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
Stability & Storage	Use a manual defrost freezer and avoid repeated freeze-thaw cycles. <ul style="list-style-type: none"> ● 12 months from date of receipt, -20 to -70 °C as supplied. ● 1 month, 2 to 8 °C under sterile conditions after reconstitution. ● 6 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

Interleukin-4 (IL-4), also known as B cell-stimulatory factor-1, is a monomeric, approximately 13-18 kDa Th2 cytokine that shows pleiotropic effects during immune responses (1-3). It is a glycosylated polypeptide that contains three intrachain disulfide bridges and adopts a bundled four α -helix structure (4). Rat IL-4 is synthesized with a 24 amino acid (aa) signal sequence. Mature rat IL-4 shares 41%, 43%, and 59% aa sequence identity with bovine, human, and mouse IL-4, respectively. Human, mouse, and rat IL-4 are species-specific in their activities (5-7). IL-4 exerts its effects through two receptor complexes (8, 9). The type I receptor, which is expressed on hematopoietic cells, is a heterodimer of the ligand binding IL-4 R α and the common γ chain (a shared subunit of the receptors for IL-2, -7, -9, -15, and -21). The type II receptor on nonhematopoietic cells consists of IL-4 R α and IL-13 R α 1. The type II receptor also transduces IL-13 mediated signals. IL-4 is primarily expressed by Th2-biased CD4⁺ T cells, mast cells, basophils, and eosinophils (1, 2). It promotes cell proliferation, survival, and immunoglobulin class switch to IgG1 and IgE in rodent B cells, acquisition of the Th2 phenotype by naïve CD4⁺ T cells, priming and chemotaxis of mast cells, eosinophils, and basophils, and the proliferation and activation of epithelial cells (10-13). IL-4 plays a dominant role in the development of allergic inflammation and asthma (12, 14).

References:

1. Benczik, M. and S.L. Gaffen (2004) *Immunol. Invest.* **33**:109.
2. Chomarat, P. and J. Banchereau (1998) *Int. Rev. Immunol.* **17**:1.
3. McKnight, A.J. *et al.* (1991) *Eur. J. Immunol.* **21**:1187.
4. Redfield, C. *et al.* (1991) *Biochemistry* **30**:11029.
5. Ramirez, F. *et al.* (1988) *J. Immunol. Meth.* **221**:141.
6. Leitner, D. and T.L. Feldbush (1988) *Cell. Immunol.* **111**:451.
7. Mosman, T.R. *et al.* (1987) *J. Immunol.* **138**:1813.
8. Mueller, T.D. *et al.* (2002) *Biochim. Biophys. Acta* **1592**:237.
9. Nelms, K. *et al.* (1999) *Annu. Rev. Immunol.* **17**:701.
10. Paludan, S.R. (1998) *Scand. J. Immunol.* **48**:459.
11. Corthay, A. (2006) *Scand. J. Immunol.* **64**:93.
12. Ryan, J.J. *et al.* (2007) *Crit. Rev. Immunol.* **27**:15.
13. Grone, A. (2002) *Vet. Immunol. Immunopathol.* **88**:1.
14. Rosenberg, H.F. *et al.* (2007) *J. Allergy Clin. Immunol.* **119**:1303.