Indoleamine 2,3-dioxygenase [IDO]

**Indoleamine 2,3-dioxygenase (IDO)**

Indoleamine 2,3-dioxygenase (IDO; indoleamine-pyrolyse 2,3-dioxygenase; EC 1.13.11.42) [1-3] is the rate-limiting enzyme in tryptophan (Trp) catabolism. It catalyzes the oxidative degradation of L-tryptophan to N-formylationureine. Because of this catalytic activity, it has been postulated that one possible role of IDO is to inhibit the proliferation of intracellular pathogens [4, 5] or tumor cells [6] by depriving them of tryptophan.

**Immunoregulatory Functions of Indoleamine 2,3-dioxygenase**

The immunoregulatory potency of IDO became clear in 1998 when D. H. Munn, et al. demonstrated that IDO is a crucial component of the mechanisms by which the allogeneic fetus protects itself from rejection by the maternal immune system [7]. IDO contributes to the protection against autoimmunity [8, 9], allergy [10], and the control of inflammatory pathology [11, 12]. Inhibition of the immune response is thought to be caused by the effect of IDO on T cells. T cells undergoing antigen-dependent activation are exquisitely sensitive to local tryptophan catabolism, which causes them to arrest in G1, become anergic, or die [13-15]. Dendritic cells (DC) are suspected to be a crucial source of IDO. The protein is detectable and active in murine [16, 17] as well as human [18] DCs.

**Literature References**


For Related Products CD152 and ODNs see Backcover!
**Related Products**

**CD152 [CTLA-4]**

**CD152 (human):Fc (human) (cytolytic)**
- CHI-HF-2118-A001 1 mg
- Produced in N1 cells. The extracellular domain (124 aa) of human CD152 (CTLA-4) is fused to the Fc portion of human IgG1. **SPECIFICITY:** Binds human CD80 (B7-1) and CD86 (B7-2).
- Manufactured by Chimerogen.

**CD152 (mouse):Fc (mouse) (cytolytic)**
- CHI-MF-1104-A001 1 mg
- Produced in N1 cells. The extracellular domain (160 aa) of mouse CD152 (CTLA-4) is fused to the Fc portion of mouse IgG2a. **SPECIFICITY:** Binds mouse CD80 (B7-1) and CD86 (B7-2).
- Manufactured by Chimerogen.

**CD152 (mouse):Fc (mouse) (non-cytolytic)**
- CHI-MF-1204-A001 1 mg
- Produced in N1 cells. The extracellular domain (160 aa) of mouse CD152 (CTLA-4) is fused to the Fc portion of mouse IgG2a. **SPECIFICITY:** Binds mouse CD80 (B7-1) and CD86 (B7-2).
- Manufactured by Chimerogen.

**CD152 (human)-mug Fusion Protein**
- ANC-501-020A Purified 25 mg
- ANC-501-820 Biotin 25 mg
- ANC-501-040 FITC 50 tests
- ANC-501-050 R-PE 50 tests
- Produced in BHK cells. Soluble molecule consisting of the extracellular domain (125 aa) of human CD152 (CTLA-4) fused to the Fc portion of mouse IgG2a (232 aa). **SPECIFICITY:** Binds with high affinity to human or mouse CD80 (B7-1) and CD86 (B7-2).
- Manufactured by Ancell Corporation.

**Mab to CD152 (human) (20A)**
- CHI-HA1-CD152-C100 100 µg
- CHI-HA1-CD152-C500 500 µg
- **CLONE:** 20A. ISO TYPE: Mouse IgG2a. **IMMUNOGEN:** Recombinant human CD152-Fc (CTLA-4-Fc). **SPECIFICITY:** Recognizes human CD152. **APPLICATION:** FC, WB, FNC: Blocking; enhances T cell proliferation.

**Mab to CD152 (human) (Blocking) (ANC152.2/BHS)**
- ANC-359-020 Purified 100 µg
- ANC-359-520 F(ab’)2 120 tests
- **CLONE:** ANC152.2/BHS. ISO TYPE: Mouse IgG1. **IMMUNOGEN:** Recombinant human CD152-Fc (CTLA-4-Fc). **SPECIFICITY:** Recognizes human CD152. **APPLICATION:** FC, IHC (FS), IP, FNC: Blocks binding of CD152 Ig fusion protein to its CD80 (B7-1)/CD86 (B7-2) receptors.
- Manufactured by Ancell Corporation.

**ODNs**

Unmethylated CpG motifs are prevalent in bacterial in contrast to vertebrate genomic DNA. Both, microbial DNA and synthetic oligonucleotides containing unmethylated CpG motifs (CpG-oligonucleotides or ODNs) have been found to induce innate immune responses through motif-specific activation of toll-like receptor 9 (TLR9). Recent studies indicate that CpG-ODNs not only act as immunostimulatory agents but can also induce immune suppression depending on IDO and their route of administration [1-3].

**Technical Note**

“Cytolytic” fusion proteins bind to a receptor and potently destroy the cell receptor, thus modulating the immune response.

“Non-cytolytic” fusion proteins bind the receptor and act in a long lasting way without destroying the receptor cell. Mutations to the complement (C1q) and FcR binding sites of the IgGsFc fragment render the fusion proteins incapable of antibody directed cytotoxicity (ADCC) and complement directed cytotoxicity (CDC).

**Related Compounds**

**Tranilast**
- [N-(3',4'-dimethoxyanilino)antharic acid, 3,4-DA]
- ALX-550-409-M10 10 mg
- ALX-550-409-M50 50 mg

**Kynurenic acid**
- ALX-550-052-M250 250 mg
- ALX-550-052-G001 1 g

**L-Kynurenine**
- ALX-550-408-M50 50 mg

**Controlled Drug and ODNs**

**L-LYSINE**
- Used to keep the solution in a clear state.

**Translant**
- Used to form a stable compound with another compound.

**Kynurenic acid**
- Used to inhibit the activity of the enzyme.

**L-Kynurenine**
- Used to increase the pH of the solution.

**Tranilast**
- Used to improve the solubility of the compound.

**Kynurenine acid**
- Used to act as a prodrug.

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