

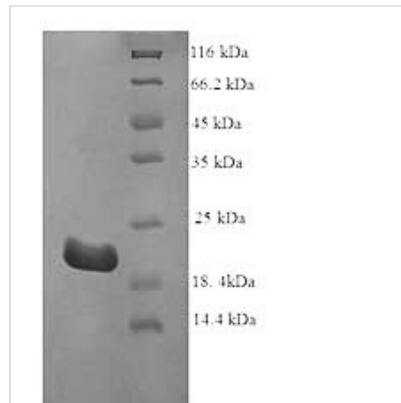


Recombinant Bovine Interferon tau-1 (IFNT1)

Product Code	CSB-YP322795BO
Relevance	Paracrine hormone primarily responsible for maternal recognition of pregnancy. Interacts with endometrial receptors, probably type I interferon receptors, and blocks estrogen receptor expression, preventing the estrogen-induced increase in oxytocin receptor expression in the endometrium. This results in the suppression of the pulsatile endometrial release of the luteolytic hormone prostaglandin F2-alpha, hindering the regression of the corpus luteum (luteolysis) and therefore a return to ovarian cyclicity. This, and a possible direct effect of IFN-tau on prostaglandin synthesis, leads in turn to continued ovarian progesterone secretion, which stimulates the secretion by the endometrium of the nutrients required for the growth of the conceptus. In summary, displays particularly high antiviral and antiproliferative potency concurrently with particular weak cytotoxicity, high antiluteolytic activity and immunomodulatory properties. In contrast with other IFNs, IFN-tau is not virally inducible.
Storage	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.
Uniprot No.	P15696
Alias	Antiluteolysin Trophoblast antiluteolytic protein Trophoblast protein 1 Short name: TP-1 Trophoblastin
Product Type	Recombinant Protein
Immunogen Species	Bos taurus (Bovine)
Purity	Greater than 90% as determined by SDS-PAGE.
Sequence	CYLSEDHMLGARENLRLLARMNRLSPHPCLQDRKDFGLPQEMVEGNQLQKD QAISVLHEMLQQCFNLFYTEHSSAAWNTTLLQLCTGLQQQLLEDLDACLGPV MGEKDSMDGRMGPIILTVKKYFQGIHVYLKEKEYSDCAWEIIRVEMMRALSSST TLQKRLRKMGGDLNSL
Lead Time	3-7 business days
Research Area	Others
Source	Yeast
Gene Names	IFNT1
Protein Names	Recommended name: Interferon tau-1 Short name= IFN-tau-1 Alternative name(s): Antiluteolysin Trophoblast antiluteolytic protein Trophoblast protein 1 Short name= TP-1 Trophoblastin
Expression Region	24-195aa
Notes	Repeated freezing and thawing is not recommended. Store working aliquots at 4°C for up to one week.
Tag Info	N-terminal 6xHis-tagged



Mol. Weight	21.8kDa
Protein Description	Full Length of Mature Protein

Image


(Tris-Glycine gel) Discontinuous SDS-PAGE (reduced) with 5% enrichment gel and 15% separation gel.

Description

Interferon tau-1 (IFNT1) is a crucial cytokine involved in maternal recognition of pregnancy in ruminant ungulates. It is primarily secreted by mononuclear trophoblast cells of peri-implantation conceptuses into the uterine lumen [1][2]. Initially known as ovine trophoblast protein (oTP-1) or trophoblastin, IFNT1 was later named interferon tau (IFNT) due to its unique developmental expression by trophoblast and its similarity to other Type I interferons [3][4]. IFNT1 is synthesized and secreted by the trophoblast of blastocysts, serving as the initial fetal signal required for maternal recognition of pregnancy [5]. It acts on endometrial cells in a paracrine manner, inhibiting the transcription of certain genes and suppressing the release of luteolytic prostaglandin F₂ α , thereby maintaining corpus luteum function [6][7]. IFNT1 plays a critical role in preventing luteolysis and supporting early pregnancy [8][9].

The biological activity of IFNT1 is essential for establishing and maintaining pregnancy in ruminants. It is a major conceptus protein that initiates maternal recognition of pregnancy and exerts an antiluteolytic effect crucial for the continuation of pregnancy [10][11]. IFNT1's unique properties, such as its massive production by trophoblast cells and potent antiviral and antiproliferative effects, distinguish it as a distinct Type I interferon subtype with significant biological functions [12]. The cytokine's actions on the endometrium and its ability to modulate gene expression highlight its importance in the complex interactions between the conceptus and the maternal reproductive system [6][7][13].

References:

- [1] . Sakurai, A. Sakamoto, Y. Muroi, H. Bai, K. Nagaoka, K. Tamura et al., "Induction of endogenous interferon tau gene transcription by cdx2 and high acetylation in bovine nontrophoblast cells", *Biology of Reproduction*, vol. 80, no. 6, p. 1223-1231, 2009. <https://doi.org/10.1095/biolreprod.108.073916>
- [2] M. Kim, H. Lim, J. Lee, S. Park, J. Won, & H. Kim, "Analysis of bovine interferon-tau gene subtypes expression in the trophoblast and non-trophoblast cells", *Journal of Animal Reproduction and Biotechnology*, vol. 33, no. 4, p. 195-203, 2018. <https://doi.org/10.12750/jet.2018.33.4.195>



- [3] F. Bazer and W. Thatcher, "Chronicling the discovery of interferon tau", *Reproduction*, vol. 154, no. 5, p. F11-F20, 2017.
<https://doi.org/10.1530/rep-17-0257>
- [4] M. Conde-Hinojosa, J. Gallegos-Sánchez, G. Hernández, J. Salazar-Ortiz, F. Clemente-Sánchez, & C. Cortez-Romero, "Involvement of the interferon tau gene in maternal recognition of gestation in sheep", *Agro Productividad*, 2021.
<https://doi.org/10.32854/agrop.v14i8.2039>
- [5] Y. N, W. Pc, H. Zd, G. Ff, L. Yang, C. Mset al., "Expression of interferon?tau mrna in bovine embryos derived from different procedures", *Reproduction in Domestic Animals*, vol. 44, no. 1, p. 132-139, 2009.
<https://doi.org/10.1111/j.1439-0531.2007.01009.x>
- [6] J. Lee, J. Stanley, J. McCracken, S. Banu, & J. Arosh, "Intrauterine coadministration of erk1/2 inhibitor u0126 inhibits interferon tau action in the endometrium and restores luteolytic pgf2alpha pulses in sheep1", *Biology of Reproduction*, vol. 91, no. 2, 2014.
<https://doi.org/10.1095/biolreprod.113.111872>
- [7] . Sakurai, H. Bai, R. Bai, D. Sato, M. Arai, K. Okudaet al., "Down?regulation of interferon tau gene transcription with a transcription factor, eomes", *Molecular Reproduction and Development*, vol. 80, no. 5, p. 371-383, 2013.
<https://doi.org/10.1002/mrd.22171>
- [8] N. Forde and P. Lonergan, "Interferon-tau and fertility in ruminants", *Reproduction*, vol. 154, no. 5, p. F33-F43, 2017.
<https://doi.org/10.1530/rep-17-0432>
- [9] T. Fair, "Embryo maternal immune interactions in cattle", *Animal Reproduction*, vol. 13, no. 3, p. 346-354, 2016.
<https://doi.org/10.21451/1984-3143-ar877>
- [10] M. Stojkovi?, E. Wolf, M. Büttner, U. Berg, G. Charpigny, A. Schmittet al., "Secretion of biologically active interferont by in vitro-derived bovine trophoblastic tissue1", *Biology of Reproduction*, vol. 53, no. 6, p. 1500-1507, 1995. <https://doi.org/10.1095/biolreprod53.6.1500>
- [11] A. Ealy, A. Alexenko, D. Keisler, & R. Roberts, "Loss of the signature six carboxyl amino acid tail from ovine interferon-tau does not affect biological activity1", *Biology of Reproduction*, vol. 58, no. 6, p. 1463-1468, 1998.
<https://doi.org/10.1095/biolreprod58.6.1463>
- [12] F. Bazer, T. Spencer, & T. Ott, "Placental interferons", *American Journal of Reproductive Immunology*, vol. 35, no. 4, p. 297-308, 1996.
<https://doi.org/10.1111/j.1600-0897.1996.tb00485.x>
- [13] K. Nakamura, K. Kusama, Y. Suda, H. Fujiwara, M. Hori, & K. Imakawa, "Emerging role of extracellular vesicles in embryo–maternal communication throughout implantation processes", *International Journal of Molecular Sciences*, vol. 21, no. 15, p. 5523, 2020. <https://doi.org/10.3390/ijms21155523>

Reconstitution

We recommend that this vial be briefly centrifuged prior to opening to bring the contents to the bottom. Please reconstitute protein in deionized sterile water to a concentration of 0.1-1.0 mg/mL. We recommend to add 5-50% of glycerol (final concentration) and aliquot for long-term storage at -20°C/-80°C. Our default final concentration of glycerol is 50%. Customers could use it as reference.