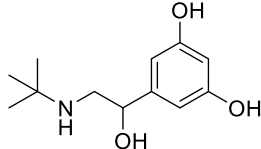


Product data sheet



MedKoo Cat#: 318804 Name: Terbutaline CAS#: 23031-25-6 (free base) Chemical Formula: C ₁₂ H ₁₉ NO ₃ Exact Mass: 225.1365 Molecular Weight: 225.288	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years. In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Terbutaline is a β_2 adrenergic receptor agonist, used as a "reliever" inhaler in the management of asthma symptoms and as a tocolytic (anti-contraction medication) to delay preterm labor for up to 48 hours. This time can then be used to administer steroid injections to the mother which help fetal lung maturity and reduce complications of prematurity. It should not be used to prevent preterm labor or delay labor more than 48–72 hours.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
Water	22.53	100.0

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	4.44 mL	22.19 mL	44.39 mL
5 mM	0.89 mL	4.44 mL	8.88 mL
10 mM	0.44 mL	2.22 mL	4.44 mL
50 mM	0.09 mL	0.44 mL	0.89 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Carvajal Gonczy CM, Tabatabaei Shafiei M, East A, Martire E, Maurice-Ventouris MHI, Darlington PJ. Reciprocal modulation of helper Th1 and Th17 cells by the β_2 -adrenergic receptor agonist drug terbutaline. *FEBS J.* 2017 Sep;284(18):3018-3028. doi: 10.1111/febs.14166. Epub 2017 Aug 8. PMID: 28710773.
2. Fan Z, Lin W, Lv N, Ye Y, Tan W. R- and S-terbutaline activate large conductance and Ca²⁺ dependent K⁺ (BKCa) channel through interacting with β_2 and M receptor respectively. *Biochim Biophys Acta.* 2016 Nov;1858(11):2745-2752. doi: 10.1016/j.bbame.2016.07.016. Epub 2016 Jul 30. PMID: 27480802.

In vivo study

1. Shahidullah M, Wilson WS, Rafiq K, Sikder MH, Ferdous J, Delamere NA. Terbutaline, forskolin and cAMP reduce secretion of aqueous humour in the isolated bovine eye. *PLoS One.* 2020 Dec 21;15(12):e0244253. doi: 10.1371/journal.pone.0244253. PMID: 33347508; PMCID: PMC7751850.
2. Lu K, Chen X, Zhu W, Mao X, Yang Y, Qiu J, Zhang M, Cheng R. Terbutaline alleviates the lung injury in the neonatal rats exposed to endotoxin: Potential roles of epithelial sodium channels. *Pediatr Pulmonol.* 2019 Mar;54(3):280-288. doi: 10.1002/ppul.24242. Epub 2019 Jan 15. PMID: 30644180; PMCID: PMC6618278.

Product data sheet



7. Bioactivity

Biological target:

A β 2-adrenergic receptor agonist.

In vitro activity

When PBMCs were exposed to only TERB (Terbutaline) without the activation stimulus, there were no cytokines detectable in the supernatant (data not shown). Upon activation in the presence of TERB, an increase of IL-17A concentration was observed in the majority of the samples (Fig. 2A). A minority of the activated samples showed a trend of decreased IL-17A upon treatment with TERB (Fig. 2A). When data were pooled together, the level of IL-17A produced by activated cells was increased by approximately 1.3-fold ($P < 0.01$) upon treatment with TERB (Fig. 2B). TERB decreased IFN γ concentrations in the subjects' samples to about 0.6-fold of the activated control group (Fig. 2C,D). The TERB effect on IL-17A and IFN γ was attenuated by the β 2AR-specific antagonist ICI 118, 551 (Fig. 2B,D). Together, these data demonstrate that a proportion of Th17 cells express a functional β 2AR, and that exposure of PBMC to a β 2AR agonist tends to increase IL-17A and decrease IFN γ .

Reference: FEBS J. 2017 Sep;284(18):3018-3028. <https://febs.onlinelibrary.wiley.com/doi/full/10.1111/febs.14166>

In vivo activity

Content of α -ENaC on the cell membrane determine the rate of transfer. Protein levels of α -, β -, and γ -ENaC in lungs from the LPS group were significantly lower than in the control group on both P1 and P7, while protein levels of α -, β -, and γ -ENaC in lungs from the terbutaline group were significantly higher than in the LPS group on P7. And terbutaline partially improved the protein levels of α -ENaC on P1. But there had no changes of the expression of β -, and γ -ENaC between the LPS group and the terbutaline group on P1. These data indicated that maternal exposure to endotoxin may decrease the expression of α -, β -, and γ -ENaC in neonatal rat lungs and that terbutaline can inhibit this effect (Figures 3).

Reference: Pediatr Pulmonol. 2019 Mar; 54(3): 280–288. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6618278/>

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.