



# Theophylline (201): sc-66088

## BACKGROUND

Theophylline is a colorless crystalline alkaloid that is derived from tea leaves or made synthetically. It is a methylxanthine drug that is similar to caffeine in its structure and pharmacology. Theophylline is used as a bronchial dilator for respiratory diseases such as chronic obstructive pulmonary disease (COPD) or asthma. Theophylline inhibits the TGF $\beta$  regulated conversion of pulmonary fibroblasts into myofibroblasts via cyclic adenosine monophosphate (cAMP)-PKA pathway, and it suppresses COL1 mRNA which codes for the protein collagen. Theophylline also directly activates histone deacetylase (HDAC), an enzyme that mediates inflammatory responses, and it decreases the levels of interleukin-4 (IL-4) and cyclic guanosine monophosphate (cGMP).

## REFERENCES

1. Zhang, N., Xu, Y., Zhang, Z., Liu, J., Fang, H. and Ni, W. 1999. Effects of Theophylline on plasma levels of interleukin-4, cyclic nucleotides and pulmonary functions in patients with chronic obstructive pulmonary disease. *J. Tongji Med. Univ.* 19: 15-19.
2. Barnes, P.J. 2003. Theophylline: new perspectives for an old drug. *Am. J. Respir. Crit. Care Med.* 167: 813-318.
3. Xu, Y.J. 2004. Development of Theophylline in treatment of asthma and chronic obstructive pulmonary disease. *Zhongguo Yi Xue Ke Xue Yuan Xue Bao* 26: 319-322.
4. Barnes, P.J. 2005. Theophylline in chronic obstructive pulmonary disease: new horizons. *Proc. Am. Thorac. Soc.* 2: 334-339.
5. Broseghini, C., Testi, R., Polese, G., Tosatto, R. and Rossi, A. 2005. A comparison between inhaled salmeterol and Theophylline in the short-term treatment of stable chronic obstructive pulmonary disease. *Pulm. Pharmacol. Ther.* 18: 103-108.
6. Bhat, M.A., Shah, Z.A., Makhdoomi, M.S. and Mufti, M.H. 2006. Theophylline for renal randomized, placebo-controlled trial. *J. Pediatr.* 149: 180-184.
7. Lee, D.W., Shirley, S.A., Lockey, R.F. and Mohapatra, S.S. 2006. Thiolated chitosan nanoparticles enhance anti-inflammatory effects of intranasally delivered Theophylline. *Respir. Res.* 7: 112.
8. Barnes, P.J. 2006. Theophylline for COPD. *Thorax* 61: 742-744.
9. Zhou, Y., Wang, X., Zeng, X., Qiu, R., Xie, J., Liu, S., Zheng, J., Zhong, N. and Ran, P. 2006. Positive benefits of Theophylline in a randomized, double-blind, placebo-controlled study of low-dose, slow-release Theophylline in the treatment of COPD for one year. *Respirology* 11: 603-610.

## SOURCE

Theophylline (201) is a mouse monoclonal antibody raised against Theophylline.

## PRODUCT

Each vial contains 100  $\mu$ g IgG<sub>1</sub> in 1.0 ml of PBS with < 0.1% sodium azide and 0.1% gelatin.

## APPLICATIONS

Theophylline (201) is recommended for detection of Theophylline by solid phase ELISA (starting dilution 1:30, dilution range 1:30-1:3000); may cross-react with caffeine.

## STORAGE

Store at 4° C, **\*\*DO NOT FREEZE\*\***. Stable for one year from the date of shipment. Non-hazardous. No MSDS required.

## RESEARCH USE

For research use only, not for use in diagnostic procedures.

## PROTOCOLS

See our web site at [www.scbt.com](http://www.scbt.com) for detailed protocols and support products.