

BACTERIAL TOXINS FOR RESEARCH AND INDUSTRY

PRODUCT INFORMATION

PASTEURELLA MULTOCIDA TOXIN

Pasteurella multocida toxin is produced by some strains of *Pasteurella multocida*, a small gram-negative coccobacillus that is pathogenic for many species of animals. *Pasteurella multocida* causes atrophic rhinitis, a disease in which the nasal bones of piglets are destroyed.¹ A protein toxin known as *Pasteurella multocida* toxin or dermonecrotic toxin has been isolated which produces many of the same physiological effects as the bacterium.^{2,3}

Purified *Pasteurella multocida* toxin has a molecular weight of approximately 146,000 daltons, corresponding to 1,285 amino acids.^{4,5,6} This toxin can effect the signal transduction pathway of many cells by selective transient activation of a G-protein known as G_qα.⁷ This mechanism of the activation first involves the receptor mediated endocytosis of the toxin.⁸ Subsequently, *Pasteurella multocida* toxin activates the α subunit of the G_q protein, which then activates the phospholipase C-β1 that controls several specific downstream signaling events.⁹ *Pasteurella multocida* toxin has been reported to also activate Rho kinase through a G_qα independent pathway.¹⁰

Some of the intracellular events that have been demonstrated to be caused by *Pasteurella multocida* toxin are: increase in inositol phosphates and diacylglycerol, mobilization of calcium pools, increased protein phosphorylation,^{11,12} tyrosine phosphorylation of the focal adhesion kinase p125 FAK and paxillin, activation of stress fiber formation, stimulation of focal adhesion assembly,^{13,14} and increase in endothelial permeability by stimulation of Rho kinase and myosin light chain phosphatase.¹⁵

On a cellular scale *Pasteurella multocida* toxin: stimulates *Xenopus* oocytes,⁷ inhibits some potassium currents in CHO cells,¹⁶ and is a potent mitogen of several types of cells including fibroblasts.^{12,17}

Pasteurella multocida toxin from List Biological Laboratories, Inc. is provided as a lyophilized powder, sealed under vacuum, and packaged under aseptic conditions.

This product is intended for research purposes only and is not for use in humans.

References

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Ordering Information

Product No.	Description	Size
156	<i>Pasteurella multocida</i> toxin	50.0 μ g