

## Technology Offer

# Bisphosphonates as Potential Drug Candidates for Inflammatory Lung Diseases

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## Technology

Recent findings in animal models underline the potential role of the acid sphingomyelinase (aSMase) as an important drug target in inflammatory lung diseases like acute lung injury (ALI) - the main cause of death in intensive care units -, acute respiratory distress syndrome (ARDS), lung emphysema, and cystic fibrosis.

The invention offers simple geminal bisphosphonates with a prolonged carbon chain as potent and selective inhibitors of the acid sphingomyelinase. The compounds can be synthesized in a one-step or two-step procedure and show clear inhibition of cell death in vitro. First *ex vivo* data in rats show a reduction of platelet activating factor (PAF) – induced pulmonary edema in the presence of the bisphosphonates by at least 50 percent. Aerosols of bisphosphonates may be possible applicants for the treatment of pulmonary diseases.

Besides their use in inflammatory lung diseases the bisphosphonates with prolonged carbon chain may be used as a treatment option for cystic fibrosis and atherosclerosis.

## Benefits

- ▶ **Neutral sphingomyelinase is not influenced**
- ▶ **First *ex vivo* data in a PAF-induced edema rat model showed clear edema reduction by 50 percent**
- ▶ **Inhibition of dexamethasone-induced apoptosis was proven *in vitro***
- ▶ **Substances can easily be synthesized in a one-step or two-step procedure**
- ▶ **Prolongation from 6 to 8 C-atoms shows 40 times higher inhibition rate**

## Application

Drug candidates for the treatment of inflammatory lung diseases, cystic fibrosis and atherosclerosis.

## Suitable Industry

- ▶ Pharmaceuticals

## About ipal

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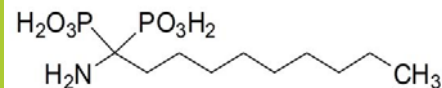


Fig.: Bisphosphonate with a prolonged carbon chain

## Keywords

Acid Sphingomyelinase, inhibitor, bisphosphonate, inflammatory lung diseases, cystic fibrosis, atherosclerosis

## Development Stage

*Ex vivo*

## IP Rights

EP Application (08/2009).  
PCT Application (08/2010).

## Patent Owner

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