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(71) Applicant (for all designated States except US): LACLEDE, INC. [—/US]; 2103 East University Drive, Rancho Dominguez, CA 90220 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): PELLICO, Michael, A. [US/US]; Laclede, Inc., 2103 East University Drive, Rancho Dominguez, CA 90220 (US).

(74) Agents: FARBER, Ph.D., Michael, B. et al.; Catalyst Law Group, 9710 Scranton Road, Suite 170, San Diego, CA 92121 (US).

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(54) Title: USE OF HYDROLYTIC AND OXIDATIVE ENZYMES TO DISSOLVE BIOFILM IN AIRWAY PASSAGES

(57) Abstract: A composition for removal of biofilm in the airway passage is useful for the treatment of infections such as pneumonia caused by Mycoplasma pneumoniae. In general, the composition comprises: (1) a quantity of at least one enzyme that catalyzes the hydrolysis of a bond that connects two monosaccharides in a polysaccharide or that connects a monosaccharide with a protein molecule in a glycoprotein sufficient to break down biofilm in the airway; and (2) a pharmaceutically acceptable carrier suitable for administration into the airway. The composition can further include ingredients such as a steroid, lysozyme, lactoferrin, or a peroxidase; if a peroxidase is included, the composition can further include an oxidase to generate peroxide as well as a substrate for the oxidase. The composition can be used in methods for treatment of an infection based on the ability of the composition to dissolve biofilm in the airway.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 08/51819

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61K 31/715 (2008.04)

USPC - 514/54

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): A61K 31/715 (2008.04)

USPC: 514/54

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC: all classes

Google Patents and Google Scholar

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WEST (PGPB,USPT,EPAB,JPAB): dextranase, pectinase, cellulose, xylanase, lysozyme, lactoferrin, potassium, lactoperoxidase, propylene glycol, tripropylene glycol, biofilm, mycoplasma, pneumoniae, esp@cenet: pellico; Google Scholar: biofilm, ferrous sulfate, inflammation, benzyl alcohol; Google Patents: biofilm, parenteral

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2002/0037260 A1 (BUDNY et al.) 28 March 2002 (28.03.2002), abstract; para [0014], [0021], [0045], [0046], [0055], [0059], [0061], [0079], [0081], [0095], [0102], [0103], [0107], [0113], [0125], [0137], [0138].	1-115
Y	US 2006/0051384 A1 (SCHOLZ et al.) 09 March 2006 (09.03.2006), para [0015], [0027], [0038], [0056], [0059], [0065], [0085], [0113], [0149], [0151], [0163], [0165], [0167], [0169], [0205], [0220], [0228] - [0232].	1-115
Y	US 2004/0101560 A1 (SAWCHUK et al.) 27 May 2004 (27.05.2004), para [0002], [0023].	14, 15, 54, 55, 56, 95-104
Y	US 2005/0249695 A1 (TILLER et al.) 10 November 2005 (10.11.2005), para [0014], [0070], [0177].	19, 48, 109-115
Y	US 6,100,080 A (JOHANSEN) 08 August 2000 (08.08.2000), abstract; col 8, ln 35-39; col 11, ln 26-30.	27, 28, 29, 30, 41, 42, 79, 80, 81, 82, 89, 90, 91, 92, 99-106
Y	US 2007/0049641 A1 (TIROUVANZIAM et al.) 01 March 2007 (01.03.2007), para [0025], [0080].	31, 32, 33, 34
Y	US 2006/0204452 A1 (VELAMAKANNI et al.) 14 September 2006 (14.09.2006), para [0037], [0183].	33, 34
Y	US 2004/0202670 A1 (APICELLA) 14 October 2004, abstract; para [0123].	112-115

 Further documents are listed in the continuation of Box C.

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Mail Stop PCT, Attn: ISA/US, Commissioner for Patents  
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Authorized officer:

Lee W. Young

PCT Helpdesk: 571-272-4300  
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,799,585 B2 (LENGLING et al.) 05 October 2004 (05.10.2004), col 1, ln 56-67.	51 - 106
Y	US 6,812,196 B2 (REES et al.) 02 November 2004 (02.11.2004), abstract; col 4, ln 39-42.	57-66, 93-100, 103-106
Y	US 6,838,050 B1 (GREEN et al.) 04 January 2005 (04.01.2005), col 3, ln 40-41; col 8, ln 6-7; col 16, ln 34-35.	83, 84, 85, 86, 87, and 88 , 93-98