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Kim et al.

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(54) **PHARMACEUTICAL COMPOSITION FOR PREVENTING AND TREATING CHRONIC OBSTRUCTIVE PULMONARY DISEASES, CONTAINING *PHYLLOSTACHYS NIGRA* MUNRO VAR. *HENOSIS* STAPF EXTRACT AS ACTIVE INGREDIENT**

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(58) **Field of Classification Search**

None
See application file for complete search history.

(56) **References Cited**

FOREIGN PATENT DOCUMENTS

CN 1159341 A 9/1997
CN 101116509 A 2/2008
CN 102038048 A 5/2011
KR 10-2004-0079206 A 9/2004
KR 10-0761248 B 9/2007
KR 10-2010-0007068 A 1/2010
KR 10-2010-0033669 A 3/2010

OTHER PUBLICATIONS

Ra et al. (2010) J. Ethnopharmacology 128, 241-247.*
Gibson et al. (2009) Thorax 64: 728-735.*
Zeki et al. (2011) Journal of Allergy vol. 2011, Article ID 861926, 10 pages.*
Silva et al. (2004) Chest; 126-59-65.*
Hu et al. (2000) J. Agric. Food Chem. 48, 3170-3176.*
Blog, Food, Sleeping and Motion Therapy!! Food is Wild Bamboo, Sasa Borealis (Hack.) Makino, Bamboo Components, Bamboo Effect, Bamboo Roots, Bamboo Leaves, Bamboo Taste, http://sleepkorea1.blogspot.kr/2012/03/blog-post_1401.html, 2012 (with accompanying machine translation into English).
Blog, "Bamboo, Sanjuk, Bamboo is?," http://blog.naver.com/sleepkorea1/120153240888, 2012 (with accompanying machine translation into English).
International Search Report from parent PCT Application No. PCT/KR2013/001802, 3 pages (Jun. 17, 2003).
Ra, "Effects of Bambusae Caulis in Taeniam Extract on Asthma," Department of Oriental Physiology Graduate School Kyung Hee University 1-65 (Feb. 2011).
Song et al., "Nuclear Factor-κB(NF-κB) Activity and Levels of IL-6, IL-8 and TNF-α in Induced Sputum in the Exacerbation and Recovery of COPD Patients," Tuberculosis and Respiratory Diseases 58(2):152159 (Feb. 2005) (w/English Abstract).
Written Opinion from parent PCT Application No. PCT/KR2013/001802, 7 pages (Jun. 17, 2003).
Kim et al., "Inhibition of Interleukin-12 Production in Mouse Macrophages via Suppression of Nuclear Factor-κB Binding Activity by *Phyllostachys nigra* var.*henosis*," Immunopharmacology and Immunotoxicology 29:131-139 (2007).

(Continued)

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(57) **ABSTRACT**

The present invention relates to a method for treating chronic obstructive pulmonary disease (COPD) comprising the step of administering the extract of *Phyllostachys nigra* Munro var. *henosis* Stapf as an active ingredient. Particularly, the extract of *Phyllostachys nigra* Munro var. *henosis* Stapf of the present invention can reduce the numbers of macrophages and neutrophils increased in bronchoalveolar lavage fluid (BALF) and is effective in preventing weight loss caused by chronic obstructive pulmonary disease and is effective in down-regulating significantly IL-6, TNF-α, IL-1β, MCP-1, and MMP-12, which are rapidly increased in bronchoalveolar lavage fluid, intrapulmonary tissue, and serum according to the development of chronic obstructive pulmonary disease. In addition, the extract of *Phyllostachys nigra* Munro var. *henosis* Stapf of the present invention has the effect of blocking the activation of NF-κB signal in intrapulmonary tissue and significantly reduces inflammatory cells in the tissues around alveoli as well as significantly reduces the size of the enlarged alveola. Therefore, the extract of *Phyllostachys nigra* Munro var. *henosis* Stapf of the present invention can be effectively used as an active ingredient of medicines and health food for the prevention and treatment of chronic obstructive pulmonary disease.

12 Claims, 8 Drawing Sheets