

Vaccines Against Acne and Acne-Associated Diseases

Tech ID: 19417 / UC Case 2009-183-0

BACKGROUND

Propionibacterium acnes (*P. acnes*) bacteria is involved in many human polymicrobial diseases. It is the causative agent in acne vulgaris, a human polymicrobial disease. Acne vulgaris is the most common skin disease, affecting more than 85 percent of people at some time during their lives and currently affects more than fifty million people in the U.S. Current antibiotic therapy for acne lesions provides a non-specific treatment that kills the majority of skin bacteria and impacts the homeostasis of skin- and intestinal-resident flora.

Acne vulgaris can result in severe inflammatory lesions that are highly associated with *P. acnes* infection. There are no appropriate therapeutic modalities that are long-lasting and systemically effective and that specifically suppress *P. acnes*-induced pathogenesis and inflammation. In addition, these bacteria have the ability to trigger inflammatory responses. Many antibiotics have been used for acne treatment, but these antibiotics in general are non-specific, short lasting, and normally are applied when acne lesions have already occurred (such as in late stages of acne). Available topical treatments for acne lesions, including drugs, are palliative and effective only while treatment is maintained. When treatment is discontinued, increased acne gain inevitably results.

TECHNOLOGY DESCRIPTION

UC San Diego investigators have demonstrated a strategy to create anti-*P. acnes* vaccines targeting the secreted antigen CAMP factor. The vaccine was effective in an animal model both prophylactically and immunotherapeutically. Developing *P. acnes* vaccines could be an effective strategy to decrease *P. acnes*-induced inflammation.

ADVANTAGES

In addition to treating acne vulgaris, an anti-*P. acnes* vaccine could benefit human polymicrobial *P. acnes* associated diseases, including endocarditis, endophthalmitis, osteomyelitis, joint, nervous system, cranial neurosurgery infections, and implanted biomaterial contamination.

Treatment of acne should be started as early as possible to minimize the risk of scarring and adverse psychological effects. Development of anti-acne vaccines may be able to prevent acne progression from the early stages and increase the specificity of treatments.

STATE OF DEVELOPMENT

In vitro data and animal models.

COMMERCIAL USE

Development of anti-acne vaccines may be able to prevent acne progression from the early stages and increase the specificity of treatments.

RELATED MATERIALS

Nakatsuji T, Liu YT, Huang CP, Gallo RL, Huang CM. Antibodies Elicited by Inactivated Propionibacterium Acnes-Based Vaccines Exert Protective Immunity and Attenuate the IL-8 Production in Human Sebocytes: Relevance to Therapy for Acne Vulgaris. *J Invest Dermatol*. 2008 May 8.

Nakatsuji T, Liu YT, Huang CP, Gallo RL, Huang CM. Vaccination Targeting a Surface Sialidase of *P. acnes*: Implication for New Treatment of Acne Vulgaris. *PLoS ONE*. 2008 Feb 6;3(2):e1551.

Acne vaccines targeting Propionibacterium acnes. Kao M, Huang CM. *G Ital Dermatol Venereol*. 2009 Dec;144(6):639-43.

OTHER INFORMATION

This technology is available for licensing

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OTHER INFORMATION

CATEGORIZED AS

- ▶ **Medical**
 - ▶ Disease: Dermatology
 - ▶ Disease: Infectious Diseases

RELATED CASES

2009-183-0

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,340,769	05/17/2016	2009-183

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