

## Acne treatment: Natural substance-based formula is more effective than artificial compounds

May 22 2013

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This image shows a girl suffering from moderate acne. Credit: University of Granada

University of Granada scientists have patented a new treatment for acne that is based on completely natural substances and is much more

effective than artificial formulas because it does not create resistance to bacteria and has no secondary effects.

The formula, developed in the Department of Microbiology, is applied directly on the skin. The principle ingredient is a circular, 70 amino acid protein known as AS-48, produced by *Enterococcus* bacteria and with no proven haemolytic or toxic activity.

As University of Granada Professor and project lead researcher Mercedes Maqueda-Abreu explains, "the [human skin](#) is the first physical barrier protecting our bodies from the exterior, but it also has to be considered as a biological barrier housing beneficial microorganisms, the [microbiota](#) of the skin, populated by bacteria and different [fungus species](#) that stop pathogens from developing." Altering the [natural equilibrium](#) of these microorganisms leads to infections that are sometimes difficult to treat—like acne (*acne vulgaris*), "a very common skin infection, principally in puberty, that causes aesthetic and health problems and damages self-esteem," or other very common skin infections produced by *Staphylococcus aureus* or *Streptococcus pyogenes*.

## Ineffective treatments

The *Propionibacterium acnes* bacteria is responsible for this infection when it develops, out of control, in areas abundant in sebaceous secretions. Current treatments are not always effective because resistance develops or undesirable side effects occur. Skin infections caused by *S. aureus* and *S. pyogenes* are increasingly demonstrating antibiotic multiresistance. They lead to serious pathologies but, to some extent, are susceptible to topical antibacterial treatment too.

The new formula developed at the University of Granada—and patented through the Office for the Transfer of Research Results (Otri)—"draws on [natural substances](#) with antibacterial activity, so they can be used as

cosmetic and/or pharmaceutical ingredients in the treatment and prophylaxis of these infections," affirms Prof. Maqueda-Abreu.

The AS-48 protein, on which the patented formula is based, has a broad spectrum of action against Gram-positive bacteria. These include important pathogens such as different species of staphylococcus, streptococcus, clostridia, micobacteriaceae and listeria, among others. Potentially, it could have many applications in human and animal clinical care and as a biopreservative in foods.

"In vitro, topical use of AS-48 alone, or together with agents that enhance its activity, has proved highly efficient in controlling the microorganisms responsible for the [skin infections](#) we're talking about", says Prof. Maqueda-Abreu.

The formula patented at the University of Granada, which does not lose activity when stored at different temperatures or on account of interactions between the active molecules and cosmetic compounds has, moreover, a further added advantage: as AS-48 targets the bacteria cell membrane, pathogen resistance is highly unlikely to develop.

Provided by University of Granada

Citation: Acne treatment: Natural substance-based formula is more effective than artificial compounds (2013, May 22) retrieved 8 May 2024 from <https://medicalxpress.com/news/2013-05-acne-treatment-natural-substance-based-formula.html>

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