

Antimicrobial strategy

- Cannabidiol and bacitracin
synergetically kill resistant bacteria

Value proposition and Field of application

The combination of bacitracin and cannabidiol is efficacious against MRSA. We are working to develop a cheap, low-dose ointment for use in two areas of high unmet need: acne and community-acquired minor skin infections.

Background and technology description

Effective treatment of minor skin infections is crucial to prevent infections becoming severe. However, liberal use of antibiotics over almost a century has created the problem of treatment-resistant bacteria. So, there is a huge unmet need for new antibiotic treatments with low risk of driving new resistance development.

Staphylococcus aureus (SA) is the most common pathogen involved in skin infections worldwide, and *methicillin-resistant SA* (MRSA) is on the World Health Organisation (WHO)'s high-priority pathogens list. So, development of products against MRSA is crucial.

Bacitracin (BAC) is an antibiotic ointment used to prevent skin infections caused by small cuts, scrapes or burns. BAC resistance is highly prevalent in community-associated MRSA strains, significantly compromising effectiveness of existing treatment. BAC is also used in some countries to treat acne, which is often associated with the gram-positive bacterium *Cutibacterium acnes*. There is a great unmet need for new acne treatments, as current treatments often cause side-effects. Since acne is treated for years, a low risk of resistance development is critical.

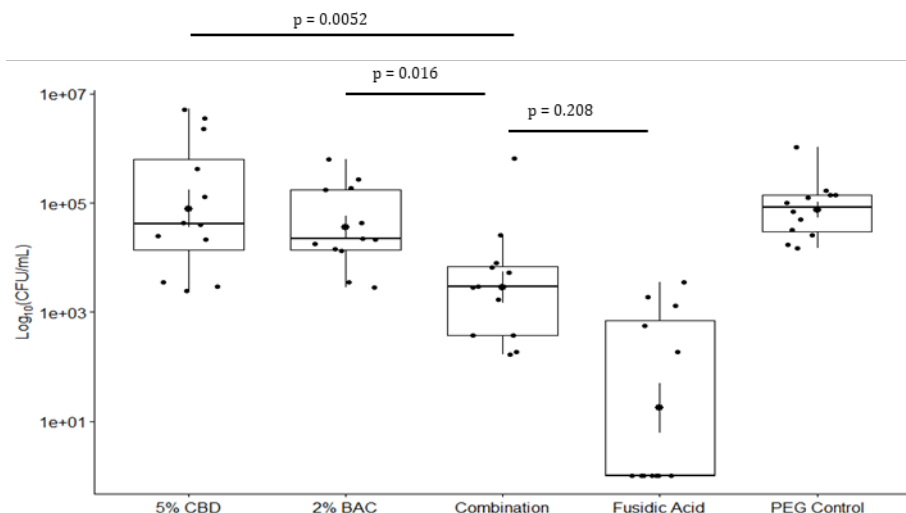
We have found synergy between bacitracin and cannabidiol (CBD) against MRSA. CBD is a cheap, natural compound. With this combination, we are working to develop an antibacterial ointment that, compared to existing products:

- is effective against more bacterial strains;
- doesn't drive bacterial resistance development to the same extent;
- contains a lower dose of bacitracin; and therefore
- has fewer side effects.

Current state of development

Mechanism of action: We have a good understanding of the mechanism of synergy, yet investigations are ongoing.

Efficacy: The combination is efficacious against MRSA and other Gram-positive bacteria *in vitro*. Preliminary results from a pilot study in a mouse skin infection model of MRSA *in vivo* show improved efficacy of the combination than either compound alone.



Resistance development: Preliminary data indicate that the resistance development towards the combination is slower than towards CBD alone.

Team

Inventor Janne Kudsk Klitgaard, Associate professor, SDU.

10+ years experience in antimicrobial research.

Advisor Jørgen Dam/Henrik Uth, Phytoreceptors ApS, specialists in BD and regulatory affairs in the pharmaceutical industry. Licensed to produce and supply intermediate medicinal cannabis products under the Danish pilot programme for medicinal cannabis. Has developed IMPDs for several investigator-initiated clinical trials using cannabinoids.

Advisor Sten Grønved, Pharmacist and owner of Faaborg Pharma with 20+ years experience in developing and producing skin care products.

Intellectual property rights

A patent has been granted in EP and patents are pending in the USA and Canada. SDU is the sole owner.

Business opportunity and Call to action

We are looking for investors to support upcoming clinical pilot studies and for pharma partners that may be interested in eventually marketing the product.

Contact information

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