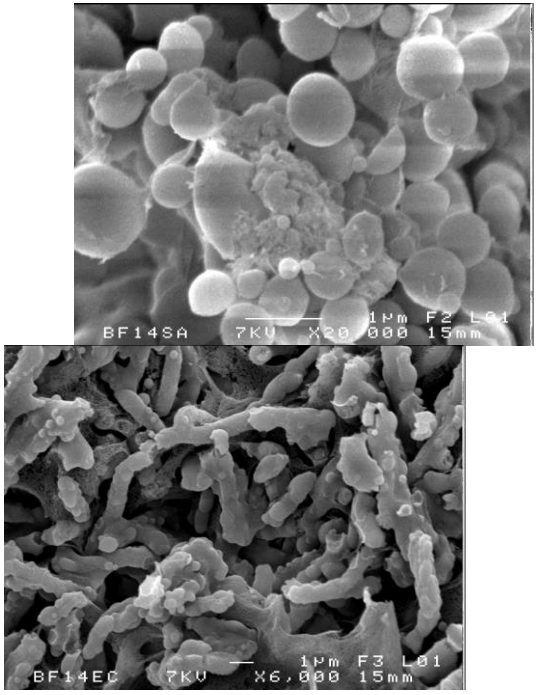
OUEST VALORISATION

BIOTECHNOLOGY - HEALTH

ANTIBACTERIAL PEPTIDES FOR MULTI-DRUG RESISTANT BACTERIA

USE OF NEW PSEUDOPEPTIDES TO TREAT, AMONG OTHERS, MRSA AND VISA STRAINS



INNOVATIVE OPPORTUNITY

Context: The emergence of multi-drug resistance in bacteria seems to be one of the most issue in human health. In this context, *S aureus and Gram negative* infections are the worst case, because of these abilities to bypass immune system and to resist against many antibiotics.

Issue: The society, both in the community and the hospitals, needs novel antibiotics, and finding new drugs active on the ESKAPE bacteria has stalled for years because it is notoriously difficult

Solution: **S**cientists have demonstrated that bacterial toxins might be an attractive starting point for antibacterial drug development. Indeed, bactericidal, cyclic pseudopeptides were inferred from an S. aureus toxin, and they elicit elevated stability in human serum. Their ctivity is against Gram-negative and -positive bacteria without erythrocyte toxicity; They induces bacterial envelope remodeling with vesicle-like bodies.

The technology developed by research team uses a toxic peptide which have been chemically modified (cyclization, introduction of analogues), allowing bacterial death while avoiding hemolytic activity against human cells and we have increased considerably their half-lifes in human sera.

Our latest results indicated a higher efficiency, compared to Vancomycin, of some peptides on various resistant strains (IMC of around 1µM)

POTENTIAL APPLICATIONS

Human health:
- Nosocomial diseases
- Multi-drug resistances : *S. aureus* (MRSA, VISA), *E. coli*, ESKAPE bacteria

Animal health:
- Bovine Mastitis, a major issue for milk collect

BENEFITS

- Natural mechanism
- Reduce production cost (peptide length = **7**aa)
- Membrane location and action, expecting low resistance levels
- Therapeutic Index up to 200

INTELLECTUAL PROPERTY STATUS

Patent application:
- EP priority date 31/10/2014

DEVELOPPEMENT STATUS

- *In vitro* tests on MRSA and VISA strains: 10 peptides have shown an antimicrobial activity compare to Vancomycin
- *IMC* : 2µM sur VISA et MRSA

LABORATORIES

- Brice Felden & Michele Baudy-Floc'h
- UMR 835 « Function, Structure and Inhibition of microbial RNA »
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CONTACT

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