Resubmitting because I did not use the template in the first time earlier today



Title: Targeted anti-bacterial and anti-fungal drug carrying nanomedicines

Itai Benhar[1]*, Iftach Yacoby[1], Lilach Vaks[1], Asaf Halperin[1], Alex Szpilman[2] and Nir Osherov[3]
[1] *Department of Molecular Microbiology and Biotechnology, The George S. Wise Faculty of Life Sciences, Tel-Aviv University, Tel-Aviv 69978, Israel*
[2] *Schulich Faculty of Chemistry, Israel Institute of Technology, 3200008 Technion-City, Haifa, Israel*
[3] *Department of Clinical Microbiology and Immunology, Sackler School of Medicine, Tel-Aviv University, Tel-Aviv 69978, Israel*

Presenter Contact Details (Benhar@post.tau.ac.il, Mob Number: +972-52-2524651) {Email: benhar@post.tau.ac.il, Office: +972-3-6407511}

Antibody-based targeted therapy is best known in oncology. In well-known examples such as antibody-drug-conjugates (ADCs), active targeting of the drug results in improved efficacy and reduced off-target toxicity. Active, antibody-based targeting was pursued less frequently as an anti-infectious agents approach.
Nanomedicines - drugs conjugated or encapsulated in nanocarriers can greatly increase their solubility, utility and reduce toxicity. Nanomedicines can be guided by target specific molecules such antibodies. As such they are referred to as “targeted nanomedicines”.
Here we show results of our studies involving the engineering and evaluation of a targeted nanometric scale drug delivery system for anti-bacterial and anti-fungal drugs. We begin with a description of early studies where the antibiotic chloramphenicol was used to treat model bacterial pathogens and continue with more recent studies where we synthesized and evaluated water soluble derivatives of Amphotericin B (AMB), a potent but highly toxic anti-fungal drug. We show that in addition to improved solubility, the conjugated drugs are as potent but much less toxic than the free drugs. We further show that when conjugated to antibody-targeted bacteriophage (phage) nanoparticles, these targeted drug-carrying nanomedicines effectively inhibit the growth of the pathogens showing a significant amplification of potency compared to the free drug.

Biography

Itai Benhar—Full Professor, Vice Dean for research at the George S. Wise Faculty of Life Sciences, Tel-Aviv University, and former chairman of the Department of Molecular Microbiology and

Biotechnology at Tel-Aviv University Israel. Prof. Benhar is an expert in the field of antibody engineering. Research in Prof. Benhar's group if currently focused on three major topics: 1) evaluation of novel formats of bispecific antibodies and of antibody-toxin fusion proteins as potential anti-cancer agents. 2) Evaluation of death switches that are activated by viral proteases for potential eradication of virus-infected cells. 3) Application of filamentous phages as targeted drug-carrying nanomedicines.

Presenting author details

Full name: Itai Benhar
Contact number: 97236407511
Twitter account:
Linked In account:
Session name/ number: Nanomedicine
Category: (Oral presentation/ Poster presentation): Oral presentation requested