




Broadspectrum Cytolysins

oncology peptides * drug delivery pathogen detection * *in vivo*
diagnostics peptides * liposomes

Advanced Biomedical (ABL) has developed synthetic cytolytic peptides with potent activity against a wide range of microorganisms and cancer cell types. With lipid bilayers in cell membranes as their target, development of resistance to their cell killing action is unlikely. Cytolysin activity can be cloaked and specifically reactivated by a range of physicochemical, biochemical and biological parameters, which can be tailored to target particular disease states. Cytolytic peptides are central to natural human disease defence and clearance using the complex machinery of specialised cells (eg defensins of macrophages, perforins of cytotoxic T cells).

ABL's cytolysins are unique synthetic mimics of white blood cell action and are particularly suited to killing cancer cells and microorganisms, including multi-drug resistant or recalcitrant intracellular infections.

- Cytolysin activity is cloaked by packaging into delivery systems which are activated by one or more bio-specific triggers such as:
 - physicochemical (pH, temperature, redox),
 - enzymes eg proteases, phosphatases, glycosidases
 - receptor binding, endosome activation.
- Cloaked cytolysins are stable in blood and have no significant activity against normal tissue.
- Uncloaked cytolysins rapidly kill cells.
- Insignificant activity beyond the immediate vicinity of uncloaking, as cytolysins are rapidly cleared.

| Synthetic mimics of natural delivery systems | | |
|--|---|---|
| Toxin mimics | Virus mimics | Cell mimics |
|  |  |  |
| 1 - 10 nm | 5 - 80 nm | 40 - 200 nm |
| Different cell envelopes of microorganisms no major effect [MIC] | | |
| Fungallyeast eg: | <i>Candida albicans</i> | 12.5 |
| Gram-positive eg: | <i>Staphylococcus aureus</i> | 12.5 |
| Gram-variable eg: | <i>Mycobacterium</i> | 25 |
| Gram-negative eg: | <i>Pseudomonas aeruginosa</i> | 50 |
| | <i>E. coli</i> | 25 |
| | <i>Salmonella enteritidis</i> | 50 |

ABL's unique technical position is provided by engineering synthetic peptides, based upon natural cytolysins. These peptides can be packaged and simply modified to activate upon encountering abnormal conditions such as those associated with diseased tissue or infecting microorganisms. Multiple triggers can be engineered into the cytolysin so that uncloaking and activation of the cytolysin is matched to the locations affected and cells targeted.

Once activated, cytolysins penetrate and disrupt cell membranes, killing cells.

- Unlike other synthetic cytolysins, our cytolysins are cloaked to prevent cytolytic action on healthy tissue.
- Unlike other antibiotics and anticancer drugs, where multi-drug resistance (MDR) is a growing problem, cytolysin-resistance is much less likely because it would require mutation of many genes to produce highly rigid lipid bilayers, which are likely to be selected against because of their biological dysfunctionality.

ABL – potent Anticancer & Antimicrobial Cytolysins.

Compound supply, disease solutions and licenses* available.

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