Role and clinical interest of membrane GRP78 against ovarian cancer

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Ovarian Cancer

- Lowest survival rate of all female cancers
- No annual test to detect ovarian cancer
- Resistance to chemotherapy and high rate of recurrence

http://ovariancancerday.org/about-ovarian
What is GRP78?

Normal function: Chaperone protein located in the ER = fold proteins

- GRP78 located at cell surface or cystolic in cancer cells
- Cancer cell microenvironment
- ER Stress
- Promotes cell growth
- Inhibit apoptosis (cell death)
- Cell proliferation
- PI3K-AKT
- Caspase 7
- Biomarker
- Antibodies
Nanoparticles

- Tiny spheres (50-800 nm) that can be loaded with drugs
- Enhanced permeability and retention

Internalization kinetics (COV318 Cell Line)

<table>
<thead>
<tr>
<th>Control (time=0)</th>
<th>Time = 4 hours</th>
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<tbody>
<tr>
<td>Nucleus</td>
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<td>Nanoparticles</td>
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<td>Cell Membrane</td>
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<td>Overlap</td>
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Coupling nanoparticles

Actively targeted drug delivery by coupling nanoparticles to antibodies that can recognize specific sequence of GRP78

*In vitro*: Cell viability assay

COV318 Cell Line 29.10.15

Results:
Coupled nanoparticles decrease cell viability
In vivo: Fertilized chicken eggs

Control: Growth = +17.85%

Taxol: Growth = -18%

Results: Taxol decreases tumor growth on tumors in vivo

Next steps:
Testing nanoparticles with taxol and antibodies (NP-Tx-Ab) in eggs

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Questions?
References


