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Abstract Category: 19. Outcome Predictors-Lab: ART (SART)
Abstract Topic: 1. ART- In Vitro Fertilization
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Are you a fellow in training in an American Board of Obstetrics and Gynecology approved program leading to certification in Reproductive Endocrinology and Infertility? No
Data is submitted for a separate scientific abstract and video presentation: No

Awards:
Resident In-Training
SRS In-Training Award for Research

IRB Approval: The study material in this abstract has been approved by the local Institutional Review Board (IRB) if any human subjects or any human material was utilized.

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Six Author Rule: All authors named in this abstract have agreed to its submission for presentation at the 63rd Annual Meeting of the American Society for Reproductive Medicine and are familiar with the 6-author rule.

Accept Complete Responsibility: I accept complete responsibility for the data at the time of submission.

Title:

L- CARNITINE PREVENTS DNA DAMAGE OF OOCYTES INCUBATED IN PERITONEAL FLUID OF ENDOMETRIOSIS
**Objective:** Endometriosis affects approximately 14% of all women 30 - 50% of infertile women, and 84% of women with infertility and pelvic pain. Previous studies by our group demonstrated damage to oocyte cytoskeleton and embryos after exogenous exposure to peritoneal fluid from patients with endometriosis. L-Carnitine (LC) is able to stabilize mitochondrial membranes, increase the supply of energy to the organelle and protect the cell from apoptotic death. The objective was to investigate the protective effect of LC on the oocyte DNA against the toxic effects of peritoneal fluid of patients with endometriosis.

**Design:** Experimental study at Reproductive Research laboratory at an academic hospital

**Materials and Methods:** 480 oocytes were divided into 4 groups Group I: 180 mature mouse oocytes (metaphase II) were incubated in peritoneal fluid (PF) of patients with endometriosis (29 mild endometriosis and 31 severe endometriosis). Group II: 180 mature oocytes incubated with LC 0.6 mg/mL + PF (1:1 dilution) and group III (control): 30 oocytes added to human tubal fluid (HTF media) and 90 oocytes added to PF of tubal ligation patients. Oocytes in each group were incubated for 30 min, 1.5 h and 4 h. TUNEL staining was done for measuring apoptosis and oocytes were examined under confocal microscopy. DNA damage was evaluated as TUNEL positive (severe damage), weakly positive (mild damage) or negative (no damage).

**Results:** Oocytes incubated in LC + PF of endometriosis showed less DNA damage compared to PF of endometriosis only. None of the oocytes were showing severe damage in LC group at all time intervals (p<0.001 for each time point)

**Table 1.** L Carnitine Reduces DNA damage in oocytes

<table>
<thead>
<tr>
<th>DNA Damage</th>
<th>Incubation</th>
<th>30 min</th>
<th>1.5 h</th>
<th>4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No LC</td>
<td>LC</td>
<td>No LC</td>
<td>LC</td>
</tr>
<tr>
<td>negative</td>
<td>48</td>
<td>60</td>
<td>9</td>
<td>49</td>
</tr>
<tr>
<td>weakly +</td>
<td>7</td>
<td>0</td>
<td>36</td>
<td>11</td>
</tr>
<tr>
<td>positive</td>
<td>5</td>
<td>0</td>
<td>15</td>
<td>0</td>
</tr>
<tr>
<td>P -value</td>
<td>p&lt;0.001</td>
<td>p&lt;0.001</td>
<td>p&lt;0.001</td>
<td></td>
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</table>

P<0.05 was considered significant for each uincubation when compared with and without LC incubation

**Conclusions:** LC significantly reduces the DNA damage of the oocytes incubated in PF of endometriosis. LC supplementation to endometriosis patients or to the culture media is a novel approach that may improve the fertility outcome in endometriosis patients.

**Support:** None.

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