

SUMMARY OF PROPOSED RESEARCH
(Do not exceed the space provided)

Describe clearly and concisely, in language readily understandable to a biomedical scientist who may not be a specialist in the research project's field, the broad objectives, specific aims, general procedures, and the potential significance of the research.

PROJECT SUMMARY

Some studies have postulated that in normal women, the endometrial cells and the tissue that arrives in the peritoneal cavity during menstruation are effectively removed by macrophages. In endometriosis patient, the number of macrophages are increased and these exhibit abnormal function and relationship with other cells. This is an important part of the pathophysiology of endometriosis.¹⁻⁶ The first part of our study will examine the role of hemosiderin-laden macrophages and endometrial cells in the diagnosis of pelvic endometriosis and compare these results with eutopic endometriotic tissue. Patients with stage I and II endometriosis have lower pregnancy rates compared to patients without the disease. Multiple mechanisms have been proposed including ovulatory dysfunction, impaired oocyte quality, defects in implantation and increased levels of oxidative stress in the peritoneal fluid that may have toxic effects on the gametes and embryos.^{3,7-10}

Numerous studies have demonstrated that TNF- α levels are elevated in peritoneal fluid of patient with endometriosis.^{10,11,12,13} TNF- α activates inflammatory leukocytes, resulting in production of other proinflammatory cytokine such as interleukin (IL)-1, IL-6, IL-8 and additional TNF- α .² TNF- α is a potent inducer of new blood vessel growth and stimulates the proliferation of endometriotic stromal cells.¹²⁻¹⁴ Using a mouse IVF model, we will evaluate the effect of the peritoneal fluid oxidative stress and TNF- α concentrations on mouse embryo development. Moreover, the reversibility of these effects will be tested by antioxidant supplementation with vitamic C and addition of anti-TNF- α antibody. The outcome of our study may help understanding the pathophysiology of endometriosis. Moreover, the use of antioxidants may help reduce the effects of high ROS and anti-TFN- α antibody may neutralize high level of TNF- α . These novel therapeutic approaches may provide an evidence based treatment modality that targets the exact etiological factors rather than the current symptomatic treatment.

Please provide five Key Words that best describe your project:

1) Macrophages 2) Oxidative stress 3) Endometriosis 4) Antioxdants 5) TNF- α .