

International Kazakh-turkish university named by H.A.Yasawy

***THE STUDYING AN INFLUENCE OF  
EXTERNAL ENDOMETRIOSIS THROUGH  
THE HISTOLOGICAL PREPARATIONS  
WHICH ARE PROCESSED BY DINITROSYL  
COMPLEX OF IRON***

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# *Relevance of the problem*

Represents the interest of studying about the effect of dinitrosyl iron complexes on fast-growing, hormone-dependent tissue in vivo.

As a model of such tissue, the pathological process of endometriosis was chosen.

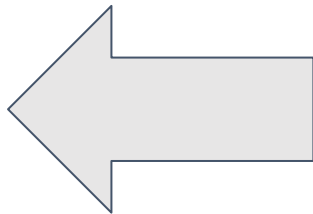
Endometriosis can rightfully be considered an **epidemic** of the 21st century that has engulfed all strata of the female population. Endometriosis affects approximately **10-15%** of women of childbearing age, **30-50%** of which are **infertile**. This determines the high social significance of this disease

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# The essence of endometriosis

Endometriosis is a chronic disease of a complex etiology, it consists in a massive proliferation of foci of tissue similar to a normal endometrium, beyond the normal localization - including outside the abdominal cavity.

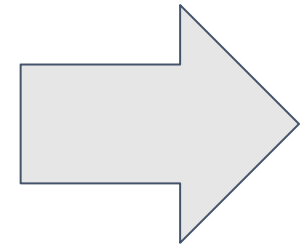
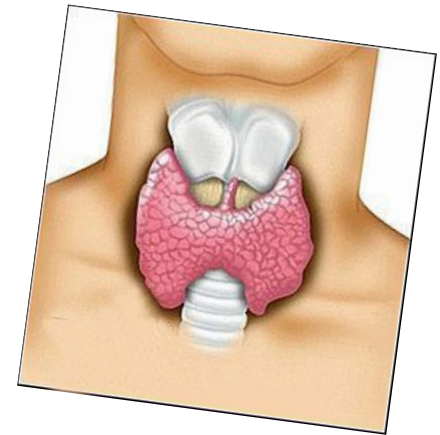
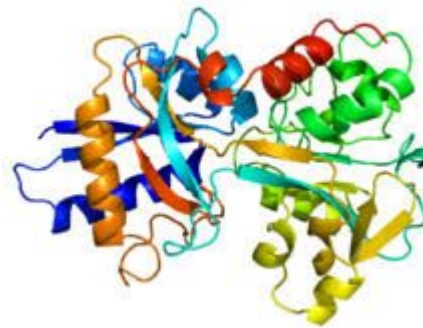


Without endometriosis  
tissue

Endometriosis tissue

# Etiology

- The effect of estrogens on thyroid function
- The close connection of the hypothalamic-pituitary-ovarian and hypothalamic-pituitary-thyroid systems
- Activation of vascular endothelial growth factors
- excess formation of free radical
- Defects in the protein portion of the transferrin
- Blocked capillary circulation



# The aim of the work

To study the influence of external endometriosis in rats with an assessment of the possibility of using exogenous dinitrosyl complexes (DIC)

# Scientific novelty

For the first time endogenous protein DIC was found in the contents of the endometriotic focus and in the liver, which indicates the excessive presence of nitric oxide and free iron (II). The latter contributes to the enhanced production of highly active free radicals in inflammation.

It was shown that low-molecular-weight DIC cause regression of endometriotic foci. This effect is more pronounced in the early stage of the formation of endometriotic foci.

## для спикинга

Обзор состоит из трех подразделов. В первом приводятся данные литературы о сущности эндометриоза, клинических особенностях, этиологии. Во втором описываются свойства гормона ингибина и связанные с ним сигнальные механизмы в живых клетках. В третьем рассматриваются свойства монооксида азота NO, его роль в метаболизме и регуляции живых клеток, а также структура и роль его комплексов с железом.

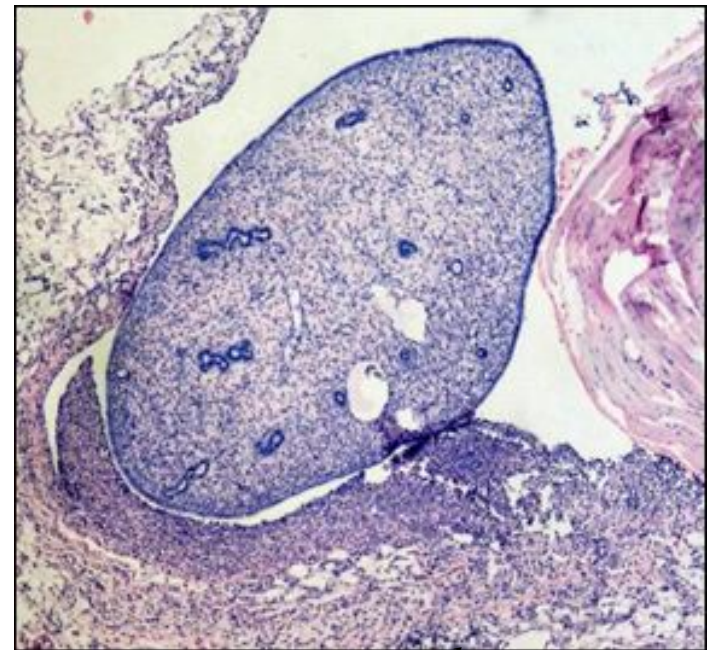
В тексте диссертации приведены сформированные автором на основе современных литературных данных две схемы воздействия на вышеупомянутую систему сигнальных путей, отвечающих на воздействие ингибина (рисунок 7), а также универсальной сигнальной молекулы — оксида азота.



# *The main content of the project*

- I. Effects on the course of experimental endometriosis of DIC with glutathione and inhibin hormone.

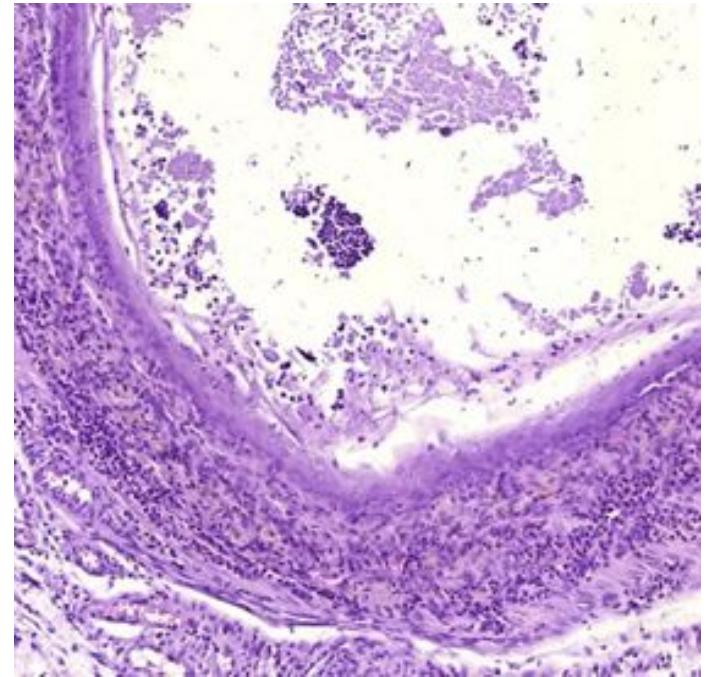
When histological examination in control samples, inflammation is observed: filling of the lumen with detritus, neutrophil infiltration; and tissue degeneration - the focus is surrounded by a fibrous pseudocapsule



*a - control*

*Staining with hematoxylin and eosin, a - x40*

In the part of the prototypes, there is a lack of endometriosis glands, their replacement with fibrous tissue, collagen deposition and the presence of mature lipocytes



b - after therapy with DNA gland with glutathione.

Staining with hematoxylin and eosin, a - x40

# Mechanisms of biological action of DIC and nitrogen monoxide NO

The principle of work of DIC is the formation of complexes with signaling molecules or the functioning of nitrosonium (NO<sup>+</sup>) ions as donors, which leads to nitrosylation of target molecules.

Under normal conditions, NO stimulates the growth and survival of cells, but in increased concentrations and with an excess of free iron, it is able to stimulate proapoptotic signaling pathways manifests itself, has an indirect effect on the growth of the endometriotic focus due to the ability of NO in elevated concentrations to inhibit angiogenesis.

# Results

*Inhibin is really capable of forming dinitrosyl iron complexes and, acting as a donor of NO and NO<sup>+</sup>, can modify receptors. And thus, in the zone of the endometriotic focus in conditions of high local concentrations of NO and iron, inhibin can change its effect as a result of its modification. And thus, in the zone of the endometriotic focus in conditions of high local concentrations of NO (10 μM) and iron (100 μM), inhibin can change its effect as a result of its modification. As a result, high affinity of Fe (NO)<sub>2</sub> grouping to thiol-containing protein ligands sufficiently stable protein DIC are formed.*

# Conclusion

1. In the endometriotic focal under the influence of exogenous DIC, a change in the ratio of glandular and stromal cells is observed, then the concentration of nitric oxide decreases.
2. the wall of the endometriotic focus and adjacent tissues of rats with model endometriosis are observed in protein DNAs for the first time in the liver
3. Histological studies showed a change in the ratio of glandular and stromal cells in the endometriotic focal under the action of the hormone inhibin.

# Literature

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