

The expression profile of indolamine 2,3-dioxygenase in murine endometrium during estrous cycle

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Abstract

Introduction: Activation of Indolamine 2,3-dioxygenase (IDO), an enzyme responsible for tryptophan catabolism, has been reported to be a necessary requirement to achieve immunological tolerance against the fetus and protection against intracellular and extracellular pathogens. The objective of this study was to evaluate the expression of IDO gene in murine endometrium and its expression rate in different phases of estrous cycle. Noticing the role of this enzyme especially in the survival of a semi-antigenic embryo, the results of this study may be used as a basis for practical studies on the immunologic bases of recurrent abortions.

Materials & Methods: In this experimental study, we studied the expression of IDO in the female BALB/c mice endometrium during four stages of estrous cycle. The phases of estrous cycle were determined by examining vaginal cytology. At each phase, endometrium was peeled away and the relative expression of IDO mRNA was detected by semi-quantitative RT-PCR using specific primers to IDO and mGAPDH as a housekeeping gene. The specificity of reaction was confirmed by enzymatic digestion of amplicon which yielded to 138bp and 259bp fragments.

Results: Our results showed, for the first time, that IDO is expressed in the endometrium of cycling mice during all stages of estrous cycle. The expression of IDO was highest at estrus and lowest at diestrus ($p < .001$).

Conclusion: Expression of IDO in endometrium during all phases of estrous cycle reveals that this enzyme as an effective arm of innate immune system may serve a role in protecting the female reproductive tract against ascending infections. Also regarding the fact that, mating only occurs at estrus phase, the high expression of IDO in this phase, may act as the main mechanism in inducing immunological tolerance to the fetus.

Key Words: Indolamine 2,3-dioxygenase, Mice, Endometrium, Estrous cycle, Immunological tolerance, Recurrent abortion.

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