

ABSTRACT EXAMPLE (TEMPLATE)

Epithelial Cadherin Immunolocalization in the Sperm Reservoir of Thai Swamp Buffalo

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Introduction

The swamp buffalo population in Thailand is dramatically decreased by numerous reasons. The factors for this animal are composed of delayed puberty, long calving interval and reproductive disturbances. In cattle, the oviducts play a vital role before fertilization, transporting the oocyte from through the infundibulum and ampulla to the place of fertilization [1]. Cadherins are a family of transmembrane glycoproteins that motivate calcium-dependent cell adhesion and they are recognized according to their tissue of derivation composed of epithelial (E), neural (N) and placental (P) cadherins [2]. E-cadherin was the first cadherin identified to play an essential role in mediating selective adhesion between epithelial cells and involved in the initial attachment of the embryo to the endometrium [3]. Thus, the purpose of this research was to detect E-cadherin in the UTJ and isthmus of Thai swamp buffalo by immuno-histochemistry.

Materials and Methods

The female reproductive organs from swamp buffaloes (n=20) were obtained at the local abattoirs. The chosen stages of estrous cycle, the follicular (n=10) and mid-luteal phases (n=10), were sorted by the manifestation of corpus luteum and dominant follicle on both ovaries. The oviducts were separated from mesosalpinx and then the uterotubal junction (UTJ) and caudal isthmus were collected and submerged in 10% buffered formalin. All sections were evaluated on E-cadherin immuno-histochemistry and evaluated under light microscopy with a digital camera Micropublisher 5.0 (Qimage, Surrey, Canada). The tissue micrographs were taken by program of Image Pro[®] Plus version 6 (Media Cybernetics Inc., MD, USA).

Results

The E-cadherin immunohistochemical reaction was depicted with strong intensity at the cell-to-cell borders of the epithelial linings of UTJ and caudal isthmus both follicular and mid-luteal phases, whereas a weak immunostaining was appeared within the cytoplasm of these epithelial linings in various area (Fig. 1).

Among members of cell-cell adhesion proteins, the presence of E-cadherin in bovine gametes and

oviduct epithelium supporting their role in gamete interaction.

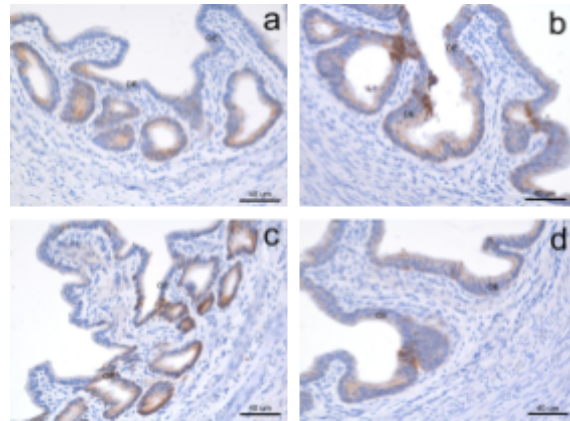


Figure 1. Immunohistochemical staining of E-cadherin in the UTJ (a, b) and caudal isthmus (c, d) at follicular (a, c) and mid-luteal (b, d) phases.

Discussion

By experimental design, the reallocate in E-cadherin localization was also scrutinize in spermatozoa released from co-cultures, indicating the involvement of the adhesion protein in assembly or disassembly of the oviduct-sperm reservoir, as part of the capacitation-related events. Various kinds of proteins appear to be lost from the plasma membrane overlying the head during sperm capacitation, and this event is related to a decrease in oviduct epithelium-sperm binding [4]. Therefore, E-cadherin could be component of this complicated array of membrane proteins participating in this incident to assure sperm association and/or release from the oviduct epithelium of sperm reservoir.

Acknowledgements

The present study was financially afforded by Faculty of Veterinary Science Research Fund, 2014, Chulalongkorn University, Bangkok, Thailand.

References

1. Pollard et al. (1991) *Biol Reprod* 44, 102-107.
2. Tsuchiya et al. (2006) *Arch Histol Cytol* 69, 135-145.
3. Dawood et al. (1998) *Am J Obstet Gynecol* 178, 996-1001.
4. Tollner et al. (2008) *Biol Reprod* 78, 400-412.