



Research Highlight

HERE'S HOW THE LUTEINIZING HORMONE ENHANCES OOCYTES VIABILITY

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Luteinizing Hormone (LH) which is also known as lutropin and lutrophin found in the anterior pituitary gland, produced by cells called Gonadotropic in response to GnRH and estrogen. Luteinizing hormone plays a key role in stimulating luteinization of the theca and granulosa cells of the pre-ovulatory follicle into luteal cells. In Bangladesh, several heifers and cows are slaughtered every day in order to fulfill the meat requirements, During this process, immature bovine oocytes become a part of the waste which can be used in the laboratory for investigations.

It is observed *in vitro* that LH can improve the nuclear and cytoplasmic maturation of oocytes in the cow. According to some investigations, it is also reported that gap injections formed between oocytes and cumulus cells or cumulus and granulosa cells which are associated with the gonadotropin-stimulated meiotic resumption of oocytes¹.

However, no adequate data is available regarding the relationship between gonadotropin stimulation as well as gap injections in the bovine which urged the scientists to conduct new research in which they performed two experiments. In one experiment, impacts of Luteinizing Hormone on bovine oocyte maturation *in vitro* were studied while in 2nd experiment, scientists investigated the

association between the gap junction as well as LH².

Accordingly, during experiment 1, Cumulus-enclosed Oocyte (CO) and Denuded Oocytes (DO) were cultured with or without LH. After 42-43 h *in vitro* culture, nuclear maturation rates which reached the meta-phase stage of the second meiotic division (M-II stage) were examined. In experiment 2, scientists assessed whether the gap junction, formed between cumulus cells and oocytes, was linked with the presence of LH in the maturation medium³.

At the end of this experiment, it was observed that gap junctions can be associated with stimulation of nuclear maturation of oocytes, but it could not be explained which factor can pass through the gap junctions in the culture medium supplemented with LH. Hence, a detailed study is required to elucidate the factor(s) including molecules. Last but not the least, it is also observed from these experiments that, luteinizing hormone possesses a positive impact on the nuclear maturation of bovine oocytes *in vitro*. The matter of crux is LH improves the nuclear and cytoplasmic maturation of oocytes *in vitro* and also enhances the oocyte quality during the maturation process.

Key words:

Immature bovine oocytes

luteinizing hormone

cytoplasmic maturation

cumulus-enclosed oocyte

nuclear maturation rates

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