Summary of: S*upplementation of porcine in vitro maturation medium with FGF2, LIF, and IGF1 enhances cytoplasmic maturation in prepubertal gilts oocytes and improves embryo quality*

In the order to produce larger number and quality of hogs for market, scientists are evaluating different ways to produce large number of hogs via a process known as porcine *in vitro* production (IVP). To date, the process of creating good quality hogs for market this way has not shown great success due to developmental problems being produced during maturation of the embryo.

When an embryo is in development at a very early stage, the fertilized egg is referred to as a blastocyst. The inner components of the blastocyte pertains mainly to the developing embryo and the follicular fluid that is surrounding the embryo, giving nutrients to allow for proper growth and development. To help with development, the follicular fluid is supplemented to produce better results; however, the problem with the fluid is that there can be variability from one group to another of blastocysts in regards to how many nutrients and growth supplementation can help to improve and produce a healthy hog.

The article's explanation of what transpired during the study was to find better ways to supplement the follicular fluid with the proper nutrients with additional factors to help improve the hogs; however, it was also to ensure the safety of the resulting embryos on the market to appease those with concerns of the affects that a "genetically manipulated" hog may have with its by-products. The experiment consisted of harvesting oocytes (egg-cells) and creating groups separated only by the introduction of cytokines to see which produced the most quantity of maturing oocytes. Each group was counted and studied to see which produced the optimal blastocyst for embryo production. The overall goal from this was to see which group incorporated both the uppermost quantity and quality of embryos. The artificial supplementation of cytokines was known in the experiment as "FLI", this constituted a combination of leukemia inhibitory factor, fibroblast growth factor, and insulin-like growth factor; these are vital to the development of the embryo. The comparison was to supplementation of follicular fluid from the sow (female hog) known as "SFF". The other two groups in the experiment pertained to a control and a group consisting of a combination of both of the FLI and SFF.

The results of the scientists' experiment were that those oocytes that had only received the FLI supplementation had the highest success rate in producing a large number of optimal embryos forming. Their findings were supported when comparing the usage of FLI supplementation to a study that was using a similar process to compare and find the best way to produce cattle and sheep in similar methods. It is stated that the embryos were not tested to see whether or not the they would be viable and survive after the experimentation. However, it is also stated that there are experiments showing that an increase in the number of embryos that undergo such testing, surviving and living to birth.

According to the researchers, supplementation of cytokines to improve *in vitro* production of embryos is a common occurrence and this study helps provide an insight to a positive side to the promotion of porcine embryonic supplementation and should help to catch up to the advanced embryonic supplementation of used in the present-day cattle industry. While the process is more difficult in regards to the porcine industry, the results will produce large numbers of excellent hogs that may be used for food or other animal byproducts.

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