

**Abstracts - 37th Annual Meeting of the Association of Embryo Technology in Europe (AETE)****OPU - IVF and ET**

# **Comparative study of oocyte recovery and embryo production using OPU- IVP techniques in six indigenous cattle breeds of India**

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In Vitro Embryo Production (IVP) is still an emerging technology under Indian context. The present experiment was undertaken to determine oocyte recovery rate and embryo production using In-Vitro Fertilization technique (IVF) in six indigenous cattle breeds of India. BAIF Development Research Foundation, Central Research Station, Uruli Kanchan, Pune, Maharashtra, initiated work for IVP and studied the performance of six zebu cattle breeds namely Gir (17 donors), Sahiwal (10 donors), Deoni (02 donors), Dangi (03 donors), Gaolao (05 donors), and Red Kandhari (05 donors). All these experimental donors were maintained under the same managerial practices with the same feeding regime. Data was generated from 901 OPU sessions performed during a study period from October 2019 to January 2022 for IVP. Ovum Pick Up (OPU) procedure was carried out once every 15 days irrespective of season. In all the OPU sessions during the experimental period, 20-gauge OPU needle was used, and the vacuum pump pressure was maintained in between 70 to 90 mm of Hg and temperature range maintained of vacuum pump was in between 37 to 38 °C. OPU was performed without using pre-stimulation protocols for the non-lactating donors. All OPU donors have lactation range from 1 to 4 and their average age ranged from 4 to 10 years. Throughout the study period, these donors were not inseminated to make them pregnant. Media used for IVP were of IVF Bioscience, UK and Vitrogen, Brazil both. Use of media was random for IVP. No separate records were maintained to study the embryo production within the breed using the two different types of media. All the recovered oocytes were further processed in laboratory for IVP with protocol of 20 to 22 hrs of maturation period, 16 to 18 hrs for fertilization and 6 to 7 days post fertilization of culture period for embryo production. The parameters studied were oocyte recovery and embryo production per OPU session.

The best average oocyte recovery resulted in Dangi ( $9.32 \pm 0.75$ ) followed by Gir ( $8.94 \pm 0.36$ ) and Sahiwal ( $7.15 \pm 0.38$ ) breed. In the remaining three breeds, the average oocyte recoveries were  $6.91 \pm 0.98$ ,  $6.74 \pm 0.92$  and  $3.86 \pm 0.61$  per OPU session in Deoni, Gaolao and Red Kandhari breeds, respectively. In terms of embryo production, Gir breed produced on average  $2.66 \pm 0.14$  embryos per OPU session, followed by  $1.96 \pm 0.15$  in Sahiwal, then  $1.90 \pm 0.30$  in Dangi breed. Results of oocyte recovery and IVP are significantly influenced by the breed ( $P < 0.01$ ). One-way ANOVA and Duncan's multiple range test were used to identify the critical differences among the breeds. All results are depicted as mean  $\pm$  standard deviation. With the present experiment we can infer that three breeds namely Dangi, Gir and Sahiwal have better performance with regard to oocyte recovery and embryo production as compared to remaining three breeds. Amongst all the six breeds, Red Kandhari cattle breed was a poor performer in terms of oocyte recovery (average  $3.86 \pm 0.61$ ) and embryo production per OPU session (average  $0.92 \pm 0.24$ ). It requires more data to conclude the performance of Zebu cattle in respect to OPU and in vitro embryo production under Indian conditions.

**Keywords:** In vitro Fertilization, Ova pick up, embryo