Epithelial growth hormone stimulates Interferon tau production by cultured bovine blastocysts

Tomas J. ACOSTA

Graduate School of Environmental and Life Science, Okayama University

A dynamic interaction between bioactive products of the embryo (blastocyst) and the endometrium is crucial for the successful establishment of pregnancy. In ruminants, the principal signal for maternal recognition of pregnancy is interferon-tau (IFNT) secreted by the trophoectoderm between days 8 and 20 post-fertilization. Epidermal growth factor (EGF) produced by the endometrium acting through EGF receptors present in the blastocyst seems to regulate embryonic growth and IFNT production. EGF and IFNT seem to play crucial roles in regulating uterine function during the establishment of pregnancy. However, it is unknown how these bioactive molecules produced by the embryo and/or endometrium interacts each other at early stages of maternal recognition of pregnancy. The aim of the present study was to clarify the effect of EGF on embryonic IFNT production in vitro. Hatched bovine blastocysts between Day 8 and Day 10 post insemination were cultured with or without EGF for 24 h. The embryonic production of IFNT was measured by enzymeimmunoassay. EGF induced a significant increase in the production of IFNT by cultured embryos. The overall results suggest that EGF participates in the local regulation of embryonic IFNT production. The stimulatory effects of EGF on IFNT may be relevant to ensure the establishment of pregnancy in cows.