REGULATED EXPRESSION OF ADHESION AND ANTI-ADHESION MOLECULES IN MOUSE ENDOMETRIUM DURING EARLY PREGNANCY

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To implant and establish the connections that are vital for further development, the early embryo must attach to and then breech the barrier posed by the epithelium of the maternal tract. Expression of adhesion and anti-adhesion molecules in the luminal epithelium of the endometrium are thought to fluctuate in a temporal pattern to 'frame' the implantation site, with their expression regulated by endocrine and paracrine factors. Anti-adhesion molecules, such as members of the mucin family, provide a barrier to implantation in sites or at times unsuitable for embryo development. Expression of adhesion molecules, or specific integrins, are thought to aid in the adhesion of the embryo, allowing it to induce changes in the underlying tissue promoting embryo invasion and pregnancy. The aim of this study was to quantitate the expression of mRNA encoding the integrins αυ, α4 and β3 and MUC1 and MUC4 from Day 0 (oestrous) to Day 4 of pregnancy (implantation) using quantitative real time RT-PCR. Uterine tissues were collected at oestrous and at Days 1, 2, 3 and 4 of pregnancy (Day 1 corresponding to the presence of a vaginal plug), total RNA was extracted, DNAse treated, reverse transcribed into cDNA, and quantified by real-time PCR using SYBR Green chemistry. All specific primers were designed using GenBank sequences and data were normalised to β-actin mRNA expression. Expression of MUC1 and MUC4 mRNAs was dramatically reduced, with mean values 20-fold and 100-fold less than at oestrous respectively, by Day 4 of pregnancy. In contrast, expression of mRNAs encoding integrins αυ, α4 and β3 was detected throughout early pregnancy. These data demonstrate that adhesion and anti-adhesion molecules are differentially expressed in the murine uterus during early pregnancy and may be key mediators in embryo implantation, promoting attachment of the embryo to the luminal epithelium in an environment conducive to embryo growth and development. *Supported by a Clive & Vera Ramaciotti Project Grant to MJ Jasper.*

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