CHARACTERIZATION OF PROGESTERONE RECEPTOR (PGR) MRNA AND PROTEIN ISOFORMS IN THE ENDOMETRIUM OF CYCLIC AND PREGNANT PIGS

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ABSTRACT

Disappearance of the progesterone receptor (PGR) from the uterine luminal epithelium (LE) is essential for cyclicity and pregnancy in pigs. In humans, three PGR mRNA isoforms (PGR-A, PGR-B and PGR-C) arise from alternative transcription start sites, encoding three protein isoforms which confer distinct biological functions. The objective was to identify and characterize PGR mRNA and protein isoforms in porcine endometrium during the estrous cycle and pregnancy. Porcine PGR gene was sequenced and homology to human PGR assessed (84%). Three transcription initiation sites were identified in endometrium: PGR-B, PGR-A and PGR-C. The presence of PGR-B and PGR-A mRNA was detected in total RNA milieu. Abundance of PGR isoform mRNA was assayed in endometrial tissue from cyclic (days 0, 5, 7.5, 10, 12, 13, 15, 17) and pregnant (days 10, 12, 13, 15, 17) pigs. Isoform PGR-B mRNA had a tendency to be greater on d 0 and d 5 and decreased on d 7.5 and d 15 ($P < 0.10$). Combined PGR-AB mRNA was constitutively, lowly abundant from d 0 to d 13 and increased on d 15 in cyclic and pregnant porcine endometrium ($P < 0.001$). The presence of two protein isoforms, PGR-B and PGR-A were detected in total endometrial cellular protein. The PGR-B isoform was more abundant in endometrium on d 0 than on d 8 and d 12 ($P < 0.05$), while PGR-A did not differ significantly with day of the estrous cycle. Presence of PGR-B protein was detected in the nucleus of the LE and glandular epithelium (GE). The PGR-A protein was detected in the cytoplasm of the LE and GE on d 8 and localized to the apical side of LE on d12.