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Developmental Expression of the Acyl-CoA Synthetase 4 in the Peri-Implantation Mouse Uterus

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Acyl-CoA synthetase 4(ACS4) is an arachidonate-preferring enzyme abundant in steroidogenic tissues and postulated to modulate eicosanoid production. Most of arachidonate present in cells is esterified predominantly in phospholipids. After its release by the action of calcium-dependent phospholipases, arachidonate can be converted to prostaglandins, thromboxanes, and leukotrenes via the cyclooxygenase and lipoxygenase pathways, respectively, depending on the cell type. Free arachidonate released from the plasma membrane is believed to be incorporated into phospholipids to prevent constant synthesis of potent eicosanoids. In the rodent, vasoactive prostaglandins are implicated in the implantation process. Here we demonstrate that ACS4 gene are differentially regulated in the peri-implantation mouse uterus. During the preimplantation period(days 2.5~3.5), the ACS4 mRNA was already present in the uterus at low level on day 3.5 until the initiation of attachment reaction after which the expression was up-regulated. In the ovariectomized mice, the ACS4 mRNA was significantly increased in the uterus with cPLA2 mRNA.

.This results suggest that the ACS4 gene is regulated in the implantation process and influenced by ovarian steroids.

Key words: *Acyl-CoA synthetase 4, Eicosanoids, Implantation process, Arachidonate*